UNIVERSITY OF CENTRAL FLORIDA Mechanical & Aerospace Engineering

EAS 4134 High-Speed Aerodynamics Fall 2014

Instructor:	Dr. Subith Vasu Office: Engr 1, 216 Email: subith@ucf.edu (preferred contact method is email via webcourses) Office hours: 2.45-5.30 PM Tuesdays	
Description:	Normal and oblique shock waves, nozzles and wind tunnels, methods of analyzing compressible flow about airfoils, wings, & bodies. Viscous boundary layers & applications to the design process.	
Goals:	To familiarize the students with compressible flow and applications in aerospace.	
Units:	3	
Prerequisite	EGN 3343 (Thermodynamics) and EAS 3101 (Fundamentals of Aerodynamics) or EML 3701 (Fluid Mechanics I)	
Lecture Times:	Tu & Th 7:30-8.45 am	Room: CB 2, 206
Required Texts:	James E John & Theo G Keith, Gasdynamics, 3 rd Edn. Additional notes may be distributed.	
References:	Other reference materials will be mentioned during lectures.	
Grading:	General guideline is: ≥ 90: A 80-89: B 70-79: C Grade curving, Pluses and minuses grading policies will be at the discr 2 Mid Exams 25% each, Sept 23 & HW & projects 25%, due (in class) of Final Exam 25%, Dec 9, 7:00-9:5	60-69: D 0-59: F s, and all other changes to the etion of the instructor. c Oct 28 (these are tentative dates) on Tuesdays 0 AM
TA/Grader	TBD	

Exams:

All exams will be OPEN TEXTBOOK but no other materials and devices (except a calculator) will be allowed. Cell phones, laptops, and tablets are prohibited during exams. The Exams may include conceptual questions and numerical calculations. Fianl exam will be comprehensive. Any cheating in exams, in any form, will result in an automatic F for semester grade. Also, all such activities will be reported to the disciplinary committee for further investigation. If you are uncertain as to what constitutes academic dishonesty, please consult "The Golden Rule", the University of Central Florida's Student Handbook (http://www.goldenrule.sdes.ucf.edu/) for further details. Medical emergencies will be accepted for absence in exams only with a supporting letter from your physician. Make-up exams will be given on a case by case basis under the discretion of the instructor.

Homework (HW):

Homework is an important part of the learning process. Homework problems will be assigned and solutions will be posted. Homework problems are the best way to apply your concepts. *Note that mastering homework problems may help performance in exams.* HW will normally be assigned on Tuesdays and due the following Tuesday in class. LATE HW will not be graded- there is no exception. Instructor may choose not to grade all homework problems.

Course Outline

The thermodynamic concepts and basic equations Waves and isentropic flows of a perfect gas Flows in variable cross-sectional area channels Stationary and moving Normal shock waves Oblique shock waves Prandtl-Meyer flows (expansion waves) Fanno-line flows (flows with friction) Rayleigh- line flows (flows with heat addition) Applications to wind tunnels, airfoils, supersonic inlets, ramjets, and scramjets

Note: The instructor reserves the right to modify the information contained in this document at his discretion. Such modifications will be announced via webcourses.