

Mechanical and Industrial Engineering 440  
Fall 2004

Aerospace Fluid Mechanics  
Course Syllabus

<u>Date</u>	<u>Topics to be Covered</u>	<u>Suggested Reading</u>
Week 1 (9/6/2004)	Introductory material and review of thermodynamics	Chapter 1
Week 2 (9/13/2004)	Integral form of conservation equations (mass, momentum and energy)	Chapter 2
Week 3 (9/20/2004)	Compressible flow concepts, the speed of sound and the Mach number	Sections 3.1-3.5
Week 4 (9/27/2004)	Isentropic flows starting with variable area flows, nozzles and diffusers	Chapter 5
Week 5 (10/4/2004)	Normal shocks	Sections 3-6-3.7
Week 6 (10/11/2004)	More normal shocks and moving shock waves	Sections 7.1-7.2
Week 7 (10/18/2004)	<b>Exam #1 (Evening of 10/21/2004)</b> Will cover material through normal shocks	
Week 8 (10/25/2004)	Rayleigh flow - 1D flow with heat addition Fanno flow - 1D flow with friction	Sections 3.8-3.11
Week 9 (11/1/2004)	Oblique shocks, bow shocks and wall interactions and reflections	Sections 4.1- 4.4, 4.6
Week 10 (11/8/2004)	Prandtl-Meyer flow and expansion waves	Sections 4.12- 4.16
Week 11 (11/15/2004)	<b>Exam #2 (11/18/2002)</b> Will cover material through expansion waves	
Week 12 (11/22/2004)	Thanksgiving - Classes cancelled all week	
Week 13 (11/29/2004)	Introduction to Computation Fluid Dynamics (CFD) including FLUENT™ tutorial session	Handouts Project Assigned
Week 14 (12/6/2004)	More fun with fluids ... discussion of a various other fluid dynamics topics.	Handouts and Field Trips?
Week 15 (12/13/2004)	<b>Final Project Due (12/15/2002)</b>	