

**ME 325 Thermal Fluid Sciences I**

Winter 2006

Instructor:

Prof. Tariq Shamim  
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Office hours: 1:00-3:00 p.m. (Tuesday)

Objectives:

- To improve the understanding of the basic principles of thermodynamics learned in the introductory course.
- To introduce the basic principles of fluid mechanics with emphasis on engineering applications.
- To develop skills to apply the principles of thermodynamics and fluid mechanics in designing and analyzing a broad range of engineering systems.

Prerequisites:

- ENGR 216/ME 215    Computer Methods for Engineering / Computer Methods in Mechanical Engineering
- ME 230              Thermodynamics

Text:

*Fundamentals of Engineering Thermodynamics*  
M. J. Moran and H. N. Shapiro, 5<sup>th</sup> Edition, John Wiley, 2004

*Fluid Mechanics: Fundamentals and Applications*  
Y. A. Cengel and J. M. Cimbala, McGraw Hill, 2006

Grading:

Home Work	10%
Exams	90%

General Rules:

- Attendance at lectures is essential and students are expected to have read the material before each lecture.
- Intellectual collaboration in HW assignments is permitted and encouraged (merely copying solutions from others will only hurt the students' ability to do well on exams).
- HW assignments will be collected in class before the lecture on their due dates. There will be 50% penalty for late submission of HW. No assignment will be accepted after its solutions are posted.

(ME 325 class info ....cont'd)

- Exams will be closed book and closed notes.
- Make up exams will not be given except in cases such as documented illness and similar reasons.
- The honor code will be in effect throughout the course.
- Some of the above rules may be changed during the term by a vote of the class.

#### Statement on Academic Integrity:

The University of Michigan-Dearborn values academic honesty and integrity. Each student has a responsibility to understand, accept, and comply with the University's standards of academic conduct as set forth by the Code of Academic Conduct, as well as policies established by the schools and colleges. Cheating, collusion, misconduct, fabrication, and plagiarism are considered serious offenses. Violations will not be tolerated and may result in penalties up to and including expulsion from the University.

### Class Syllabus

Lec.	Date	Topics	Chapter	HW due
1	1/10	No Class		
2	1/17	Introduction, Gas Power Systems	M1, M9	
3	1/24	Vapor Power Systems	M8	#1
4	1/31			#2
5	2/07	Refrigeration	M10	#3
6	2/14	Thermodynamic Relations	M11	#4
7	2/21	Non Reacting Mixtures, Exam #1	M12	
8	2/28	No Class (Spring Recess)		
9	3/07	Reacting Mixtures and Combustion	M13	#5
10	3/14	Fluid Introduction, Fluid Statics, Exam #2	C1-3	
11	3/21	Fluid Kinematics, Mass Equation	C4, C5	#6
12	3/28	Momentum Equations	C6	#7
13	4/04	Energy Equations, Exam # 3	C6	#8
14	4/11	Dimensional Analysis	C7	#9
15	4/18	Fluid Differential Form of Laws	C9	#10

Exam # 4 (on final exam date)

M: Moran/Shapiro  
C: Cengel/Cimbala