

ME 201, Section 002
INTRODUCTION TO THE THERMAL & FLUID SCIENCES
Fall 2008

MWF 3:35-4:25 PM 358 Willard Building

Instructor: Mr. Ahmet TURHAN (aut122@psu.edu)

- Primary Office: 319 Reber Bldg. Phone: 863-2945
- Secondary Office (**for Office Hours Only**): TBA
- Office Hours: **Tue. 5:45 -6:45 pm & Thur. 4:00-6:00 pm,**

Teaching Assistant: Mr. Girish Kumar RAJAN

Office Hours: TBA

Course objectives: After completion of this course, the following should be attained:

- A. Develop an appreciation for the application of fundamental principles (state relationships, conservation laws, 2nd law of thermodynamics, rate laws for transport of momentum and heat) to solve engineering problems and to understand everyday phenomena.
- B. Develop an appreciation for the role of experiment and empiricism as a bridge between incomplete theory and the need for information for engineering design.
- C. Develop a rudimentary understanding of how various energy-conversion devices and systems operate, e.g. power plants, engines, and heating and cooling systems.
- D. Understand the relationship of thermal-fluid sciences to other engineering and non-engineering disciplines.

Text: *Thermal-Fluid Sciences: An Integrated Approach*, S. R. Turns
Available at the Student Book Store, 330 E. College Ave.

Grade policy:

Homework	25%	Late drops prior to first exam - WN
In-class quizzes	20%	Late drops after first exam:
Two In-class exams	30%	with a score $\geq 60\%$ - WP
One final exam (Comprehensive)	20%	with a score $< 60\%$ - WF
Attendance	5%	

Final letter grade will be determined according to the following table. The instructor may adjust this scale in the final analysis, but in no case will scores higher than those listed be required to achieve the stated letter grades.

Total points	93 - 100	90 - 92	87 - 89	83 - 86	80 - 82	77 - 79	70 - 76	60 - 69	Below 60
Letter grade	A	A-	B+	B	B-	C+	C	D	F

Exams: Two in-class midterm exams will be given on Oct. 1st and Nov. 5th. A comprehensive final exam will be given during exam week.

Quizzes: Quizzes will be given at the end of class every other Friday. The quizzes will evaluate comprehension of lecture material. The lowest quiz score will be dropped at the end of the semester.

Homework: Homework assignments will be posted on Angel one week prior to their due date. Expect 10-12 homework assignments. Late homework will *not* be accepted, except when required by University policy. The lowest homework score will be dropped at the end of the semester. Grading of the homework will focus on the solution method and clearness of presentation. Homework will be given a *score of zero* if the following format is not followed:

- All work is to appear on 8 1/2 x 11 inch engineering paper (one side only).
- Edges of paper must not be ragged or torn.
- Problems are to be presented in order, with each problem beginning on a new page
- All pages in an assignment must be stapled together in their proper sequence
- All work must be printed in pencil.
- All answers are to be boxed-in with proper signs and units.
- Name, date, page #, and problem # are to appear on each homework assignment.

Solutions: Solutions to the homework, quizzes, and exams will be posted on Angel.

Missed exams and quizzes: No make-up exams or quizzes will be given except when required by University policy. See instructor *prior* to any anticipated absence.

ACADEMIC HONESTY: The work on all quizzes and exams is to be yours alone. Failure to abide by this rule, or the commission of any other deliberately dishonest act, may result in failure of the course, with no late drop permitted. Unauthorized use of a solutions manual is a deliberately dishonest act. For University & College policies on academic integrity see <http://www.psu.edu/ufs/policies> and <http://www.engr.psu.edu/CurrentStudents/acadinteg.asp>.

Course Outline: For detailed course outline please see ME201_Fall08_Syllabus.xls on Angel.

Week 1	INTRODUCTION – THERMAL SCIENCE APPLICATIONS
Week 2 – Week 3	THERMODYNAMIC PROPERTIES – RELATIONSHIPS – PROCESSES
Week 4	CONSERVATION OF MASS
Week 5 – Week 6	ENERGY and ENERGY TRANSFER - HEAT & WORK
Week 7 – Week 8 – Week 9	CONSERVATION OF ENERGY – CLOSED SYSTEM – C.V.
Week 9- Week 10	2 nd LAW of THERMODYNAMICS
Week 11 – Week 12	CONSERVATION OF MOMENTUM
Week 13	SIMILITUDE ANALYSIS
Week 14	THANKSGIVING HOLIDAY
Week 15 – Week 16	FLOW PATTERNS - EXTERNAL FLOW – INTERNAL FLOW – FRICTION and HEAT TRANSFER