

MAE 3310-001 Thermodynamics I
Tuesdays and Thursdays 9:30–10:50 am
Fall 2009

Instructor: A. Haji-Sheikh

Office: Room 300C Woolf Hall

Office Hours: 11:00–12:00 p.m. Tuesday and Thursday or by appointment.

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Textbook: “Thermodynamics, An Engineering Approach” by Y. A. Çengel and M. A. Boles, 6th Edition (2008), McGraw-Hill, New York.

Course Description: Basic concepts and definitions, properties of pure substance, work and heat, first law of thermodynamics, second law of thermodynamics, entropy and thermodynamics of gases, vapors and liquids in various non-flow and flow processes.

Course Learning Goals/Objectives: This is to introduce the basic principles of thermodynamics with emphasis on engineering applications.

Attendance and Drop Policy: The school drop policy will be followed. Attendance may be taken at the beginning of a class. Students who come in late and miss signing the attendance sheet will be considered as absent. The attendance record will be considered for borderline cases at the end of the semester.

Course Content:

This course includes all materials within the fundamentals of thermodynamics:

1. Introductory Concepts and Definitions
2. Properties of Pure Substances
3. First Law of Thermodynamics: Closed System
4. First Law of Thermodynamics: Control Volumes
5. Second Law of Thermodynamics
6. Entropy
7. Availability Analysis

Grading Policy:

Mid-Term Exams (2) 40% (20% each)

Homework 10%

Computer Project 10%

Final Exam 40%

Examination format open book; other details will be announced in advance. No make-up exams will be given except for documented excuses of inability to attend the examination acceptable to the instructor. Homework will normally be assigned on Thursday and due the following Thursday at the beginning of class and solutions will be available to the students (by TA).

The key assignments for this course are the examinations and the class projects. In order to pass this class, students must submit and pass all key assignments. If any key

assignment is not submitted and passed, an individual will not pass the class even if he/she scores perfectly on all exams and other assignments.

You should take the homework assignments seriously and seek help from the TA or the instructor when needed. The TA is instructed to locate your mistakes and to help you find the correct solution. Also, as stated in the syllabus, there will be an assigned computer project. It is specifically designed to be an open ended project.

Study Suggestions: Most of the thermodynamic equations are simple and require little effort to understand. Being able to reproduce an equation is no guarantee of being able to apply that equation to solving problems. To use an equation properly, one must understand it. Understanding involves not only knowing what the symbols stand for but also knowing when the equation applies and when it does not apply. As an example, everyone knows the ideal-gas equation $PV=mRT$, this equation does not apply to problems involving liquids or solids. It is important to know where an equation comes from and what physical phenomenon it represents. They generally represent laws describing experimental observations. The equations describe the basic laws of thermodynamics made without approximations. You should also know the meanings of the various defined terms.

Finally, assigned homework serves as an aid to learning thermodynamics. You should take the homework assignments seriously and seek help from the TA or the instructor when needed.

Americans with Disabilities Act: The University of Texas at Arlington is on record as being committed to both the spirit and letter of federal equal opportunity legislation; reference Public Law 93112-The Rehabilitation Act of 1973 as amended. With the passage of new federal legislation entitled Americans with Disabilities Act – (ADA), pursuant to section 504 of The Rehabilitation Act, here is renewed focus on providing this population with the same opportunities enjoyed by all citizens.

As a faculty member, I am required by law to provide “**reasonable accommodation**” to students with disabilities, so as not to discriminate on the basis of that disability. Student responsibility primarily rests with **informing faculty at the beginning of the semester and in providing *authorized* documentation through designated administrative channels.**

Academic Dishonesty: It is the philosophy of The University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspensions or expulsion from the University.

The Regents’ Rules and Regulations, Part One, Chapter VI, Section 3, Subsection 3.2, Subdivision 3.22) defines scholastic dishonesty as “Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.”