ME 200—Course Information and Policies

Course

ME 200—Thermodynamics I
Room: ET 107
Time: 4:30–5:45 T Th

Instructor

Donald W. Mueller, Jr., Ph.D., P.E.
Office: ET 321J
Hours: 9:15–10:15 a.m. M T W Th & 3:00–4:00 p.m. T Th†
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Description

First and second laws, entropy, reversible and irreversible processes, properties of pure substances, applications to engineering problems

Text

Fundamentals of Thermodynamics, 8th ed., Wiley
Borgnakke and Sonntag

Pre-requisite

CHM 115 – Chemistry

Co-requisite

MA 261 – Multivariate Calculus

Homework

Ten homework assignments (see the class schedule) will be collected and graded. Please start each problem on a new sheet of paper, write neatly, and clearly indicate your final numerical answers. Copying is not permitted and will result in a zero. Typically, homework will be due one week from the day on which it was assigned. No late homework will be accepted. Supplementary problems are listed on the class schedule. You are expected to work these problems, but they will not be collected. Solutions to these problems will be posted on my webpage.

Project

A project will be assigned during the semester. This project will cover topics in a somewhat open-ended manner and will probably require decision-making and some computer usage. A brief memo summarizing your work will be required. A penalty will be assessed if projects are submitted late—no projects will be accepted three days after the due date.

Quizzes

There will be six closed-book/closed-note, 35-45 minute quizzes or “mini-exams”. Each quiz will have two (or three) problems that are similar to homework problems. You will be allowed to use the Thermodynamic Property Tables in the back of your text and an equation sheet may be provided. No make-up quizzes will be given. If you miss a quiz, your score on the final will be used.

Final Exam

There will be a comprehensive final exam on Thursday, May 3 from 4:00–6:00 p.m. The final will consist of six or seven problems—problems similar to those on the quizzes. On the final you will be allowed to use the Thermodynamics Notes from the FE Handbook. These notes are located on my webpage and at the NCEES website (www.ncees.org). Please download and print a copy. The final may be used to replace your lowest quiz score.

†Available other times. If you need something, please stop by anytime that I am in my office.
Grades

Averages will be based on the following distribution:

- Homework 10%
- Project 10%
- Quizzes 60%
- Final Exam 20%
- Total 100%

Grades will be assigned in accordance with the following criteria:

A ≥ 90%, 89% > B ≥ 80%, 79% > C ≥ 70%, 69% > D ≥ 60%, F < 60%.

With the plus/minus grading system, the following grades are also available for assignment in this class: A–, B±, C±, and D±. These grades will be used to differentiate performance if warranted.

Policies

As a courtesy to the instructor and other students, do not be late for class and turn off your cell phone.

No late homework. Late projects will be penalized—no projects accepted three days after the due date.

Consult the student handbook for information pertaining to a grade appeal or grievance policies.

Many services are available to students. The Center for Academic Support and Advancement (CASA) offers tutoring in KT G23. Personal Counseling Services (373-8060) are available to students in Walb 210. Students with a disability in need of assistance should contact the SSD office in Walb 113 (481-6658 or www.ipfw.edu/ssd) for a description of services available.

Comments

Thermodynamics will establish and develop your problem solving approach and style.

Thermodynamics will lay the foundation for future thermal-fluid science courses.

Many upper-level engineering courses will follow a format similar to this course.

In the past, the final exam has been difficult for students. It is my belief that if you really understand the problems throughout the semester, the final should not be that difficult.

Please feel free to stop by any time if you have any comments or suggestions. I truly am interested in what you think about the course. Any suggestions that will benefit the class are appreciated, and I will try my best to address any concerns that you might have.

If you do not feel comfortable discussing matters with me, feel free to speak to the chair of the department, Dr. Nash Younis.

Quote to consider:

“The mere imparting of information is not education, above all the effort must result in making a man think and do for himself.”

Carter G. Woodson 1875-1950

†These are maximum cut-offs.
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Outcomes
A student who successfully fulfills the course requirements will have demonstrated:

1. an ability to understand the relationship between the transformation of energy and the status of matter (a)
2. an ability to apply the First Law to open and closed systems (a,e)
3. an ability to apply the Second Law to open and closed systems (a,e)
4. an ability to understand entropy and isentropic efficiency (a,e)
5. an ability to analyze and design simple thermodynamic cycles (a,c,e,g,k)

Program Outcomes
Engineering programs must demonstrate that their graduates have:

(a) an ability to apply knowledge of mathematics, science, and engineering
(b) an ability to design and conduct experiments, as well as to analyze and interpret data
(c) an ability to design both thermal and mechanical systems, components, or processes to meet desired needs within realistic constraints such as economic, environmental, social, ethical, safety, manufacturability, and sustainability
(d) an ability to function on engineering and science laboratory and project teams as well as multi-disciplinary teams
(e) an ability to identify, formulate, and solve engineering problems
(f) an understanding of professional and ethical responsibility
(g) an ability to communicate effectively in both verbal and written forms
(h) the broad education necessary to understand the impact of engineering solutions in a global and societal context
(i) a recognition of the need for, and an ability to engage in life-long learning
(j) a knowledge of contemporary issues
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice, including analysis and design.