ME 10.311 and 10.312
Engineering Thermodynamics I and II
Fall 2009 Course Syllabus

Instructor Information
Instructor: Tom Merrill, Ph.D.
Office: Rowan Hall 231
Office Phone: 856-256-5343
Email: merrill@rowan.edu
Office Hours: T: 9:30-10:30 am, Th: 9:30-10:30am or by appointment
Secretary: Dorothy Stiles, 856-256-5311 (email: stiles@rowan.edu)

Class Times and Information (labs, field trips, and exams may alter class times & locations)
Lecture: T 10:50pm -12:05pm 126 Library
Lecture, Discussion, Rev. Th and F 10:50-12:05pm 226 Library
Website http://users.rowan.edu/~merrill

Course Learning Goals
• Able to solve energy problems using the first and second laws of thermodynamics
• Able to use the computer to effectively solve energy problems.
• Able to appreciate and take into account the inherent coupling of energy and our environment
• Able to communicate in a clear and professional manner.
My goal is to help each student become competent at solving thermodynamics problems. It should prepare each student to successfully pass the thermodynamics sections of the Fundamentals in Engineering (FE) Exam.

Course Description
Thermodynamics provides a way to analyze any energy system. Topics include:

<table>
<thead>
<tr>
<th>Thermo I</th>
<th>Thermo II</th>
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<tr>
<td>Foundational Concepts</td>
<td>Power Cycles</td>
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<tr>
<td>Fluid Properties</td>
<td>Refrigeration Cycles</td>
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<tr>
<td>Work and Heat</td>
<td>Psychrometrics</td>
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<tr>
<td>First Law</td>
<td>Chemical Reactions</td>
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<tr>
<td>Second Law</td>
<td></td>
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</tbody>
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STUDENT CENTERED LEARNING & What I expect from you **
• Before class: I prefer that everyone do their assigned reading and practice problems PRIOR to class.
• During class: I prefer that everyone take genuine responsibility for learning.
• After class: I prefer that everyone review their understanding and raise questions or issues through office hours, email communication, or at the start of the next class.
• Overall: I want you to enjoy this class and leave believing you have valuable skills needed to solve energy system problems. I also want you to form habits of professionalism, including the ability to summarize ideas and write concisely, work well in teams, and understand the value of follow-through.
** For “what you can expect from me” – please see my website: http://users.rowan.edu/~merrill

A Typical Week
• Week in Preview (WIP), posted each Sunday evening: http://users.rowan.edu/~merrill
• 3+ hours of lecture (T, Th, F): 1-1.5 chapters worth of text material
• Occasional Fridays: demonstrations, labs, field trips, and exams
• Homework: ~ 5-10 problems linked to lecture and text
• 2 hours of office hours support
Required and Supplemental Websites

Required Text:
- Student Companion Website for this text: [http://bcs.wiley.com/he-bcs/Books?action=index&bcsId=2939&itemId=0471737593](http://bcs.wiley.com/he-bcs/Books?action=index&bcsId=2939&itemId=0471737593)

Supplemental Websites:

Course Grading

Your grade will be based on a total points system:

**Grading Scale (absolute - not curved)**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
<th>Work Quality</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>90-100%</td>
<td>Outstanding</td>
</tr>
<tr>
<td>B</td>
<td>80-89%</td>
<td>Professional</td>
</tr>
<tr>
<td>C</td>
<td>70-79%</td>
<td>Adequate</td>
</tr>
<tr>
<td>D</td>
<td>60-69%</td>
<td>Inadequate</td>
</tr>
<tr>
<td>F</td>
<td>≤ 59%</td>
<td>Poor</td>
</tr>
</tbody>
</table>

Ones' place cutoffs: 0-2 (-), 3-6 ( ), >7 (+)

In the end - the grade weighting will approach: homework & jumpstart (~ 10%), labs/projects (~25%) midterm (~25%), final (~ 35%), & professionalism (~ 5%). The typical average grade is ~81, with a standard deviation of ~10.

Inevitably questions will arise about grades. I have two goals: 1) be fair and 2) be efficient. With these goals in mind, initial discussions about individual grades will take place individually in my office. Please do not ask questions about your grade in class. If you leave my office dissatisfied, please put in writing your argument for grade change. I will carefully review your argument and meet you a second time.

General Policies

Homework:

Homework will be assigned each week. Problem sets will track reading assignments and discussions. Requirements include the following:

- Homeworks are submitted at the BEGINNING of the class according to the posted due date.
- Homeworks should be done with pride. Discussions are encouraged but don’t shortcut the process of learning the material without first attempting each problem on your own. A 15 or 20 minute first attempt is STRONGLY recommended. If you do homework with other students list the students last names.
- Standard homeworks should follow the format shown in the required text and in line with the posted format found on Dr. Wyrick’s website: [http://users.rowan.edu/~wyrick/student_resources/Example%20homework%20format.pdf](http://users.rowan.edu/~wyrick/student_resources/Example%20homework%20format.pdf)
- Some homeworks may involve written assignments. Clear thinking leads to clear writing; these assignments help me evaluate your understanding.

Each week only a selected problem(s) will be graded. Grading will be based on clarity of approach and final answer. All solutions will be posted. Late homework will be graded in the following manner. Less than one week late: 70% of grade, 1-2 weeks: late 35% of grade, and after 2 weeks late – no credit. Homework provides feedback – if you’ve “got it” or if you’re “lost”. Make the most of it before you’re sitting in an exam.
Jumpstart

To encourage people to “pre-think” the material before they come to lectures I will periodically ask for a class jumpstart. Examples of jumpstarts include:

- Summarizing 1 or 2 sections in the book
- Explaining figures, schematics, tables, equations or photographs from the text.
- Connecting what’s in the text to real-life examples.

At the beginning of my lecture I will select each team RANDOMLY, using a random number generator. I will grade the team on 10 point scale after class. Notes are allowed, but not texts.

Midterm and Final Exams

Exams will likely be given on Fridays. Prior to each exam there will be review period where teams will present practice problem solutions to the class. Prior to each exam I will provide learning objectives, key terms, and key equations needed to solve the problems. The exam may be open or closed book.

Missed exams can be made up in cases of extreme circumstances, e.g. illness requiring medical care, death in family, or travel related to University or work activities (for part-time students). Requests for make-up exams must consist of a) a typed & signed one-page letter explaining the reason for missing the exam, and b) relevant corroborating documentation (e.g. a doctor’s note). If missing an exam is anticipated, make arrangements at least one week in advance. If the missed exam is unanticipated, a request for a make-up exam must be in my hands (not my mailbox) within a three-day period after the scheduled exam day.

Email

Please communicate with concise language, using a professional tone and style. Please number your specific questions instead of embedding them into block paragraphs. I will check my email on a fixed frequency and respond quickly. If I do not – please resend a gentle reminder.

Academic Integrity

I value integrity. The damage to your reputation that results from academic dishonesty is hard to overcome. Matters of academic misconduct will follow guidelines stated in the “Rowan University Student Handbook.”

Academic dishonesty unchallenged becomes professional dishonesty. The damage from this dishonesty in the workplace goes beyond reputation; it has serious consequences for your freedom, your health and the well-being of the people and the environment around you.

Fundamentals of Engineering (FE) Exam:
This course will prepare you for the FE exam, a partial requirement to become a professional engineer (PE). Please see my website for list of topics and key equations: [http://users.rowan.edu/~merrill](http://users.rowan.edu/~merrill)

Class Schedule
Our schedule will adapt to our ability to cover material effectively. Please check my website for schedule updates every week: [http://users.rowan.edu/~merrill](http://users.rowan.edu/~merrill)

Accessibility Note – Rowan University
Your academic success is important. If you have a documented disability that may have an impact upon your work in this class, please contact me. Students must provide documentation of their disability to the Academic Success Center in order to receive official University services and accommodations. The Academic Success Center can be reached at 856-256-4234. The Center is located on the 3rd floor of Savitz Hall. The staff is available to answer questions regarding accommodations or assist you in your pursuit of accommodations. We look forward to working with you to meet your learning goals.