THERMODYNAMICS I (MEAM 203)

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Recommended Reading (available at the Reserve Desk in the Towne Library):  
2. K. Wark, Thermodynamics, McGraw-Hill  
   Reynolds' Energy makes delightful reading. The book covers most of the material we shall study in "layman's" fashion.

Web Site: http://www.seas.upenn.edu/~meam203

Lectures: Towne 321, Tuesdays and Thursdays 9-10:30AM

Recitation: Towne 309, Thursday 3-4PM  
The recitation will primarily be used to answer your questions. In the absence of questions, I will solve sample problems. Occasionally, the recitation time will be used as a make-up time for lectures I have missed because of travel or other contingencies.

Midterm Dates:  
Midterm 1: Thursday, October 9. During recitation time!  
Midterm 2: Tuesday, November 18

Course Structure and Grading Policy

1. Homework problems will be assigned weekly (20% of the final grade). Homework problems will be handed out and collected during lecture time on Tuesdays. Tuesday was chosen for this purpose in order to give you an opportunity to ask questions about the homeworks during the recitation time on Thursday. Since we are posting sample solutions, late submissions will not be accepted! The two assignments with the lowest grades will be excluded from the computation of the course grade. Some of the homework problems may require the use of microcomputers. The use of Maple is encouraged but not required.

2. Midterms: There will be two midterms. Each midterm will contribute 20% to the final grade. The midterms are scheduled for:  
   (i) Thursday, October 9, during recitation time  
   (ii) Tuesday, November 18, during regular class time
The midterm dates are announced well in advance to enable you to make all necessary arrangements to attend. Make-up exams are possible only under very special circumstances and with my prior approval. Make-up exams are strongly discouraged due to the absence of an adequate comparison group for the grading of the students taking the make-up exam.

3. **Final Exam**: The final exam will contribute 35% to the final grade. The final exam will be given during the final exams period as scheduled by the registrar. The tentative schedule for the final exam is Tuesday, December 16, 11:00AM-1:00PM. The actual date, time, and location of the final exam will be specified in the examination roster.

**Note**: All midterms and the final examination will be closed books. You are allowed to prepare one sheet 8*11 with formulas. The thermodynamic data will be provided by the instructor. Sample exams and formula sheets from prior years are posted on Blackboard.

4. **Electronic Quiz**: The electronic quizzes will contribute 5% towards the final grade. The electronic quizzes will be available on-line through Blackboard. Each quiz will be posted on Friday, and it will be removed Monday night ten days later. Access to the quiz will be controlled through a password that will be supplied for each quiz. The quiz must be completed in a single session, within the allotted time (typically 30 minutes). Once you have logged onto the quiz, you will not be allowed to log on for a second time. The quiz will typically require no more than 15 minutes to complete. Some of the quizzes will require you to have the textbook with you. When this will be necessary, a message to this effect will be posted.

5. **Questions**: Asking questions is an important part of the learning process. I strongly encourage you to ask questions and make sure that you understand the material. You may ask questions during lectures, recitations, and office hours or make a special appointment to see me. Electronic mail is also a convenient means of communication. I do not, however, read my mail during weekends and nights, so do not expect an immediate response. Start on your homeworks early and allow time for responses to any of your questions. I will be glad to clarify concepts and straighten out misunderstandings. Neither the TA nor I will solve your homework problems for you!

6. **Class attendance**: Attending class is an important part of the learning process. Since if you skip class you will need to pick up the information taught in your absence, you are likely to lose more time by not attending class than by attending class. If you do not attend, you also risk getting incomplete and unreliable information. *Past experience has shown that usually the people who skip class are the ones who are least able to afford it.* Also, in general (although not always), people who skip class tend to perform less well on exams than students who attend class.
Homework Problems-General Instructions

1. Homework problems are an integral part of the course. They are designed to enhance the material covered in class, cover complementary material, allow you to test your understanding of the course material, and provide feedback to the instructor. To encourage you to take the homework problems seriously, I will include at least one of the homework problems in some form on the exams.

2. Homework problems will be given every Tuesday and should be handed in the next Tuesday in class. Under no circumstances will late submissions be accepted. Since we are posting sample solutions as soon as the homework problems are collected, it would not be fair to accept late arrivals. Recognizing that occasionally people may have justifiable reasons for not being able to submit homework assignments on time, I will allow you to skip up to two submissions without penalty (they will be excluded from the computation of the course grade through the two lowest grades exclusion). You should still do the homeworks (on your own) even if you are not able to submit them for grading.

3. By the end of the semester, you will have been given about 10-11 problem sets. The final homework grade will be based on the total number of assignments given minus two. That is, you may miss up to two assignments for whatever reason (sickness, personal problems, laziness, etc.) without penalty. Should you hand in all the assignments, the two worst grades will be disregarded. Thus, there is an incentive for handing in all homework assignments.

4. Your answers will be graded and returned to you. A sample answer sheet will be posted on either reserve in the library or on the web.

5. Format of Homeworks:
   a. Use standard size paper (8 ½” by 11”) and staple together all the sheets for a given assignment. Make sure that your name appears at the top of each sheet.
   b. You may submit your homeworks as a computer printout (i.e., a Maple worksheet or a Mathematica notebook). The computations should be accompanied by a clear explanation of what you are doing.
   c. Each solution should contain the problem number, a brief statement of what is given, and what is required. You need not copy the questions themselves.
   d. Show all major steps of reasoning - remember, the grader is neither a mind reader nor a detective.
   e. State the appropriate dimensional units with your results. Answers without units will be assumed to be wrong even if the numerical value is correct.
   f. Write clearly. Illegible work or homework which does not conform with the above instructions will not be graded.
6. I emphasize the manner in which homework is to be presented for the following reasons. First, in order to make a neat presentation, you must think in a clear, logical manner. A messy presentation is often indicative of a confused mind. Second, once you graduate and enter the work force, report writing may be a prominent part of your engineering career. You often may be communicating with your supervisors and colleagues through technical reports and notes; and, on occasion, people in higher management who are not familiar with you personally will read these reports and notes. The opinion they form of you will depend on the quality of your written presentation. Sloppy reports will leave the impression that you are a slob who should not be promoted and should be the first to go in case of layoffs. Therefore, you should make a real effort to master the techniques of good writing and neat presentation.

USE OF SOFTWARE TOOLS

In some of your work, you will need to use computers. You are free to choose any software tools you wish. For example, you may take advantage of the computerized thermodynamic table available in the diskette attached to your textbook or of the thermodynamic courseware developed by us (i.e., Thermo with Maple). You may use computers to do any of your homework assignments even when the assignments do not specifically require you to do so.

A RECIPE FOR SUCCESS: HOW TO STUDY THERMODYNAMICS (OR ANY OTHER ENGINEERING COURSE)

1. Read the assigned material prior to the lecture. This way you will get the most out of the lecture.

2. As soon as possible, review the lecture material after the lecture. Research has shown that the retention of lecture material increases significantly when the material is reviewed while it is still fresh in your mind.

3. Make sure that you fully understand the concepts covered in class. If you don't, re-read the material you do not understand, discuss it with your colleagues, and ask the instructor. A good test for whether you have a full understanding of the material is to reproduce solutions for example problems on your own (without consulting the prepared solution). Understanding the solutions of sample problems while you are reading them without attempting to reproduce them does not imply that you will be able to solve the same or a similar problem on your own.

4. All numerical results must be presented with the appropriate units. Moreover, get into the habit of carrying out calculations with the units in parallel with the numerical calculations. This will give you a quick way of identifying errors. If your results end up with the wrong units, you have made a mistake. Occasionally (but not always), when you forget a formula or need to make an intelligent guess, you can arrive at the correct answer or nearly so by combining the various variables so that the units of the result come out right. Throughout the history of science, quite a few discoveries have been made this way.