

# ME 211 – INTRODUCTION TO THERMODYNAMICS

## Course Outline, Objectives, and Class Procedures

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**Text:** Thermodynamics an Engineering Approach, Y. A. Cengel, M. A. Boles, 8<sup>th</sup> Edition, 2015, McGraw-Hill.

**Purpose:** (3-0) 3 credits. Prerequisites: MATH 124 and PHYS 211. This course is an introduction to the basic concepts of energy conversion, including the first and second laws of Thermodynamics. The course includes properties and state, energy, work, heat, entropy, and systems analysis. The course focuses on a detailed study on the application of these thermodynamic fundamentals to energy conversion systems.

### Course Objectives (from department and ABET guidelines):

1. Appreciate the utility of the general engineering problem-solving method
2. Apply basic concepts, energy-related terminology and concepts, units, and dimensions
3. Apply concepts related to systems, properties and states, including heat, energy and work
4. Make computations involving special forms of work and energy
5. Detailed analysis -- The First Law of Thermodynamics
6. Detailed analysis -- The Second Law of Thermodynamics
7. Applications to Systems and Cycles

### Lectures, Questions, and Homework Problems:

This is a problem solving course. Since you have a text for the course and a well defined reading schedule (see course outline) you are expected to read the material thoroughly and take notes on what you read before each class. If you do not understand a particular point or are confused in any way, you are expected to ask questions. If you have a question and are afraid to ask, there are probably several other students with the same question. Remember no question is too simple or too foolish to ask.

Lectures will not duplicate word for word what is in the text. You will be expected to do the assigned problems and have these problems completed before the beginning of class. There are no exceptions to this policy regarding homework. You are cheating if you choose to copy someone else's homework or if you copy homework from the board during class before you have done your homework. Cheating is unethical and unprofessional.

You may stop in and see me during my posted office hours. You may email me anytime day or night. I read my email periodically during normal business hours.

### Organized Notebook:

Each student will keep an organized notebook of textbook notes, lectures and homework problems. A spiral bound notebook is required. These notebooks will not be regularly collected but **WILL** be spot checked at periodic intervals for evaluation. You must bring your notebook with you to class and to the exams always.

Divide the notebook into two approximately equal sections. The first section will be your homework problems numbered consecutively. Homework problems of course must be neat, readable, and in pencil (otherwise no credit). Each homework problem must be identified with the problem number. If you arrive at an incorrect solution simply cross out the error and begin anew. If I cannot read your assignment then you will not receive credit for doing the work.

## Extra Credit:

Students often ask (probably a result of a nice grade school teacher) what they can do to earn 'extra credit'. To this end, a student can 'volunteer' to place a homework problem and solution on the board before the beginning of the hour thus saving me class time to do the same. There is no need to check with me first. Arrive to class a little early and do the good deed. Don't forget to number the problem and write your name someplace on the board for credit. This participation (and similar contributions such as enthusiasm, interest, and dedication) is included in the subjective portion of 'class participation' of your final grade.

## Course Grade:

The grade earned by the student will be based upon the following (tentative) percentages:

Quizzes and Exams	65%
Final Exam	25%
Homework, Board Work, Neatness and Class Participation	10%
Total	100%

I reserve the right to modify percentages during the course.

The numerical score at the end of the semester covers only a portion of your final grade. Neatness, timeliness, alertness, enthusiasm, and participation also contribute to the final grade. The following nominal grade distribution may be used for your use to rank the numerical evaluation of your performance.

90-100=A; 80-89 =B; 70-79 = C; 60-69 = D, Below 60% = F

I reserve the right to revise the course outline and the course grade percentages. In an institution of higher learning the final grade is the right and responsibility of the instructor. Please do not argue about a final grade unless there is a clear and obvious error.

## Electronic Devices Policy:

Please turn off your cell phone before class starts. No text messaging in class. No headphones.

If you wish to use a laptop/tablet PC, the computer should be in the folded-mode for note taking. Web browsing, game playing, Facebook and other social networking, including sending/reading e-mail, is prohibited during the lecture period. If you wish to do any of the above please leave the room. No other use of any other electronic/computer media is allowed during class time.

## Freedom in Teaching/Freedom in Learning Statement:

*Academic freedom in teaching is fundamental for the protection of the rights of the teacher in teaching and of students to freedom in learning. It includes the freedom to perform one's professional duties and to present differing and sometimes controversial points of view, free from reprisal. Students are responsible for learning the content of any course of study in which they are enrolled. Under Board of Regents and University policy student academic performance may be evaluated solely on an academic basis, not on opinions or conduct in matters unrelated to academic standards. Students should be free to take reasoned exception to the data or views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled. Students who believe that an academic evaluation reflects prejudiced or capricious consideration of student opinions or conduct unrelated to academic standards should contact the dean of the college which offers the class to initiate a review of the evaluation.*

## ADA & Additional Comments:

1. Students with special needs or requiring special accommodations should contact the instructor, and/or the campus ADA coordinator, at 394-1924 at the earliest opportunity. These students must contact me one week before each examination if special needs are to be requested.
2. I strongly support CAMP (Center for Advanced Manufacturing and Processing) activities such as the Formula Car, Baja Vehicle, Aero Team, etc. However CAMP activities are to augment your academic experience rather than replace it. Please do not confuse your priorities. Adjustments (schedule changes, exam dates, homework assignments, etc.) to this class will not be made for CAMP activities.
3. Cheating is not allowed in any shape or form. Students who cheat will be immediately reported to the SDSMT Dean of Students. Cheating takes many forms such as copying the homework of others, looking at the answers or solutions of others during a quiz or examination, or having written or stored information not available to other students during a quiz or exam. Written information may take the form of a note, a 'cheat sheet', that written on one's hand, arm, etc. Stored information may

take the form of that stored electronically or otherwise in a computer, calculator, mobile phone, etc. These examples of cheating discussed in this paragraph are not inclusive. Students who cheat are often creative with implementation. It would be too cumbersome and impossible to describe all of the methods of cheating. If you have information that other classmates do not have during an exam, quiz or when completing a homework assignment, then cheating has occurred.

4. You must have a Properties Booklet for the quizzes and exams. This Properties Booklet is purchased from the SDSMT Bookstore at a nominal cost, essentially that of duplicating the pages. You are not permitted to write anything on or in this booklet other than your name which is optional. Anything written (whether erased or not) will void the booklet for use during quizzes and exams. Refer to statement 3 above.