South Dakota School of Mines and Technology, Rapid City, SD

THERMODYNAMICS II, Fall 2021
ME 312 – M01, 3 credits

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Office hours: Posted on the website.

Please feel free to contact me either in my office, through email, or through telephone if you have any questions or comments. Response to email messages and phone messages are usually within the day.

Location and Time: see https://www.sdsmt.edu/

Course Delivery Method: This course will be delivered face-to-face unless mandated restrictions are necessary. Course material, including the syllabus, will be available in a dedicated one-drive file. Enrolled students will have access to this file. Use of D2L will be minimized.

Course Description: (3-0) 3 credits. Prerequisites: ME211 and ME221. A detailed study of applications of thermodynamic principles to engineering systems including: exergy, steam power cycles, internal combustion engines, gas turbines, refrigeration systems, and related energy systems. Additional topics include the thermodynamics of mixtures, psychrometrics of moist air, and combustion.

Texts: Thermodynamics an Engineering Approach, Y. A. Cengel, M. A. Boles, 9th Edition, 2019, McGraw-Hill.

Introduction to Thermodynamics 1 and 2, Properties Booklet, McGraw-Hill Create Series.

Course Prerequisites: ME211 Introduction to Thermodynamics

Course Objectives:

1. Thorough understanding of the First and Second Laws of Thermodynamics

2. Apply basic concepts of exergy to engineering processes

3. Understanding of power and refrigeration cycles

4. Understanding of mixtures and psychrometrics of moist air

5. Understanding of the thermodynamics of combustion and chemically reacting systems

Technology skills:

Students are expected to have writing skills so that their work can be read by the instructor. Students are also expected to have computer skills and be able to work with spreadsheet software, word processing software, and programming in Python.

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 syllabus) 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.

You may stop in and see me during my office hours or contact me either by email or phone.

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.

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. You will turn in your completed notebook at the end of the semester.

Attendance will not be taken, nor is it required. However, if you wish to do reasonably well in this class (or achieve a passing grade) then you should plan to attend as many lectures as possible.

Course Grade:

The grading scale for exams and significant assignments will be as follows:

Letter Grade	Percent
A	90 to 100%
B	80 to 89%
C	70 to 79%
D	60 to 69%
F	0 to 59%

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

Exams and Quizzes	80%
Homework, Class Participation	20%
Total	100%

I reserve the right to modify the course outline and percentages during the course.

As in all classes at in higher learning issuing a final grade for a course is the right and responsibility of the instructor. Please do not argue about the final grade unless there is a clear and obvious error.

Academic Integrity:

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 work of others, copying solutions from the Internet, 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. Stated another way, cheating has occurred if you have information that other classmates do not have during an exam, quiz or when completing a homework assignment.

SDBOR Policy 2:33 defines "Academic Misconduct" at length, but it all comes down to cheating, plagiarizing, falsifying, copying, misrepresenting, 'borrowing' ideas or information, or helping someone else do any of these things: 1) stay far clear of anything that even *resembles* any of the actions listed above; 2) it's OK to say "NO" if someone presses for 'sharing' or 'borrowing' work. Saying "No" is deemed rude by some; it isn't. Cheating is so very tempting when deadlines loom and work piles up; however, the person being cheated is the student him or herself. Moreover, the damage extends to all classmates; and 3) I am obligated to report dishonesty, and the processes described in the Student Code of Conduct.

Freedom in Teaching/Freedom in Learning Statement:

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 Provost and Vice President for Academic Affairs to initiate a review of the evaluation.

ADA & Additional Comments:

SD Mines strives to ensure that physical resources, as well as information and communication technologies, are accessible to users in order to provide equal access to all. Students with special needs or requiring special accommodations should contact the instructor and the Title IX and Disability Coordinator. More information can be found at https://www.sdsmt.edu/Campus-Life/Student-Support/Disability-Services/

COVID-19 Statement:

In Fall, 2021 courses scheduled to meet face-to-face will be held in person and at normal capacities. If you contract COVID-19 and must isolate, you are asked to reach out to your instructor and the Dean of Students Office (deanofstudents@sdsmt.edu or 605.394.2416) to develop a plan for staying on track with your courses. Class lectures will not be recorded.