ME 0051: Introduction to Thermodynamics

(Modifications to this syllabus may be required during the semester. Any changes to the syllabus will be posted on the course website and announced in class)

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Course Lecture Times:
Mondays in Room 4-204, 1:50pm – 4:25pm

Catalog Description: 3 Credits; this course is an introduction into classical thermodynamics to provide an understanding of the basic concepts that relate to thermodynamic systems. Topics covered will include conservation of energy, work, heat, power systems, power cycles, real cycles and ideal cycles. **Prerequisites: PHYS 0174, CHEM 0960**.

Course Textbooks:
Required Text: Fundamentals of Thermodynamics, 9th Edition, Borgnakke, Sonntag. International Student Version Global Edition.
Additional Reference: Fundamentals of Engineering Thermodynamics, 8th Edition, Moran, Shapiro.

Course Objectives

- To be able to define and state the first law of thermodynamics.
- To be able to define terms such as heat, work, energy and thermal efficiency.
- Identify and describe various forms of energy.
- Describe and define various forms of energy processes such as heat engines, refrigeration and heat pumps.
- Apply first law analysis to thermodynamic system components
- Apply reversible analysis to a power system
- Apply irreversible analysis to a power system

Course Outline:

Part 1:
Introduction (Ch. 1)
Properties of a Pure Substance (Ch. 2)
First Law of Thermodynamics (Ch. 3)
Part 2:
Energy Analysis of a Control Volume (Ch. 4)
The Second Law of Thermodynamics (Ch. 5)
Entropy (Ch. 6)
Part 3:
Entropy Analysis for a Control Volume (Ch. 7)
Power and Refrigeration Systems (Ch. 9 and 10)

Examination Schedule:

Exam I on Monday October 19th
Exam II on Monday December 7th
Final Exam on Monday January 4th

Course Grading:

Homework	10%
Studios	20%
Exam I	20%
Exam II	20%
Final Exam	30%

Grading Scale: The official SCU/SCUPI grading scale will be used when determining final grades and numerical scores based on a student's course average. An additional curve may be applied, as determined by the overall final grade distribution of the class. Grades of A-, B+, B-, etc. will be determined at the instructor's discretion.

Course Schedule:

Week 1	August 31st
	No Class
Week 2	September 7th
	Course Introduction, Ch.1
Week 3	September 14th
	Ch. 2
Week 4	September 21st
	Ch. 3
Week 5	September 28th
	Ch. 3
Week 6	October 5th
	No Class/Holiday
Week 7	October 12th
	Test 1 Review
Week 8	October 19th
	Test 1
Week 9	October 26th
	Ch. 4
Week 10	November 2nd
	Ch. 4
Week 11	November 9th
	Ch. 5
Week 12	November 16th
	Ch. 5/6
Week 13	November 23rd
	Ch. 6
Week 14	November 30th
	Test 2 Review
Week 15	December 7th
	Test 2
Week 16	December 14th

	Ch. 7
Week 17	December 21st
	Ch. 7
Week 18	December 28th
	Ch. 9/Ch. 10/Final Review
Week 19	January 4th
	Final Exam
Week 20	January 11th
	Final Grades Posted on BB
Week 21	January 18th
	End of Semester

Class Policies: Regular class attendance is expected and encouraged. Each student is responsible for all of the material presented in class and in the reading assignments. Exams will emphasize treatment of material covered in lectures. In general, no late assignments will be accepted or makeup exams given. Exceptions will be made for a valid excuse consistent with University Policy. If you cannot attend an exam or meet a due date, you must contact the instructor prior to the exam or due date. Arrangements will be made for students on a case by case basis. (Failure to contact the instructor prior to the exam or assignment due date will result in a zero on that exam/assignment.)

Academic Integrity Policy: "Violations of academic integrity include, but are not limited to, cheating, plagiarism, or misrepresentation in oral or written form. Such violations will be dealt with severely, in accordance with University policy. Plagiarism means representing someone else's idea or writing as if it were your own. If you use someone else's ideas or writing, be sure the source is clearly designated." It is expected that students adhere to the academic integrity policy that is presented in the Student's Honor Code of Conduct / Student Handbook.