

FALL SEMESTER 2013

Southern Illinois University – College of Engineering

ME/ENGR 300: Engineering Thermodynamics

300 – 3 Engineering Thermodynamics. (IAI Course: ENGR 946) Study of the basic principles of thermodynamics. Engineering analysis of physical systems based on first and second laws. Properties of pure substance (ideal gas behavior, non-ideal gas behavior, and equations of state). Mixtures of ideal gases. Introduction to cycle analysis. Prerequisites: Mathematics 250, Physics 205 a,b.

Lecture: MWF 2:00 – 2:50 p.m. Neckers 440
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Teaching Assistant: Bradley Wrage, bwrage@siu.edu
Textbook: Fundamentals of Engineering Thermodynamics
M.J. Moran, H.M. Shapiro et al; John Wiley & sons, Inc., 7th Edition 2010
ISBN: 978-0-470-49590-2

Lecture Topics:

1. Basic concepts (Ch.1)
2. Heat transfer, work, and First law in closed systems (Ch. 2)
3. Ideal Gas Law, property evaluation, compressibility factor, specific heats, and polytropic processes (Ch. 3)
4. First Law applied to control volumes (Ch. 4)
5. Second law (Ch. 5)
6. Entropy (Ch. 6)
7. Vapor power cycles – Rankine (Ch. 8)
8. Gas power cycles – Otto, Diesel & Brayton (Ch. 9)
9. Refrigeration cycles – Vapor compression, Heat pumps (Ch. 10)
10. Ideal gas mixtures & psychrometrics (Ch. 12)
11. Thermochemistry – combustion (Ch. 13)

Recommendations:

Students may solve homework problems in pairs. Submitted homework assignments would thus carry two names and share a common grade. Working in pairs encourages teamwork and talker-listener interaction to problem solving.

Grading Basis:

A curved grading basis will be used and may appear as: 85.5<: A, 80-85.5: B, 74.5-80: C, <74.5: D. Note that 71 would be a "D" and 86 would be an "A". If a student has a borderline average grade, attendance as well as overall progress will be taken into account in determining the final letter grade.

Grade weighting:

Exam 1	20%
Exam 2	20%
Exam 3	20%
Final	20%
Homework	20%

SIUC EMERGENCY PROCEDURES

Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. Because some health and safety circumstances are beyond our control, we ask that you become familiar with the SIUC Emergency Response Plan and Building Emergency Response Team (BERT) program. Emergency response information is available on posters in buildings on campus, available on BERT's website at www.bert.siu.edu, Department of Public Safety's website www.dps.siu.edu (disaster drop down) and in the Emergency Response Guidelines pamphlet. Know how to respond to each type of emergency.

Instructors will provide guidance and direction to students in the classroom in the event of an emergency affecting your location. **It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency.** The Building Emergency Response Team (BERT) will provide assistance to your instructor in evacuating the building or sheltering within the facility.