

## ME 400 – ENGINEERING THERMODYNAMICS II - SPRING 2014

### Catalog

**Description:** ME 400 Engineering Thermodynamics II. Combined first and second law analysis: Exergy analysis; Analysis of power and refrigeration cycles. Detailed treatment of gas and vapor cycles including gas and steam cycles; Thermodynamics of combustion and reaction of mixtures; Introduction to thermodynamic property relations, chemical and phase equilibrium.

**Prerequisites:** ME 300.

**Lecture:** MWF 03:00 – 03:50 P.M. A 0207

**Instructor:** Dr. Tarig A. Hassan

**Office:** Engr B 116

**Email:** [tarig@siu.edu](mailto:tarig@siu.edu)

**Phone:** 618-453-7006

**Office Hours:** MW 9.00 a.m. to 10.00 A.M. (or by appointment).

### Teaching

**Assistant:** Nathaniel Sparks,

**Office:** Engr A 221

**Email:** [sparky90@siu.edu](mailto:sparky90@siu.edu)

**Textbook:** Fundamentals of Engineering Thermodynamics  
M.J. Moran, H.M. Shapiro et al; John Wiley & sons, Inc., 7<sup>th</sup> Edition 2010  
ISBN: 978-0-470-49590-2

### Lecture Topics:

- Exergy, exergetic efficiency, and exergy destruction
  - Advanced vapor power cycles
  - Gas power cycle
  - Ideal vapor compression cooling cycle, absorption cooling cycle, heat pump systems
  - Combustion and review for final exam
- These topics are covered in Chapters 7-10, and 13 in the textbook.

### Administration of the Course:

Attendance will be taken for the classes. Homework assignments are to be turned in at the beginning of class on due dates. Slipping your homework under my door or the TA's door or dropping it in the mailbox is unacceptable. For the Tests and Homework assignments, you should take note of the following:

- (a) Put name, date, course number and page number on every sheet and staple all pages together.
- (b) Use one side of the paper only.
- (c) Neat diagrams should be drawn as needed.
- (d) Show how you solved the problem by using text and descriptions throughout the steps in the solution.
- (e) Use appropriate units.
- (f) Highlight your final answer with a box or underline and give the appropriate units.

Academic dishonesty will not be tolerated. You are studying to enter a respected profession and the highest ethical standard is expected of you. Your work should be your own. For the homework assignments, you are encouraged to consult other students, the TA or the instructor if you run into problems. **Consulting is allowed but not copying.**

Also, your homework, tests, exams, reports etc are viewed as exercises in technical communication. Hence, correct procedure and effective presentations are important. As practicing engineers, your work will be read by other engineers. It should be easy to do so. The overall course grade will be based on scores obtained as shown below:

|                              |     |
|------------------------------|-----|
| Homework/Assignments/quizzes | 30% |
| Tests (3 tests)              | 50% |
| Final Examination            | 20% |

There will be a 5% bonus for class attendance and participation. Any student who is absent from a class for **ANY** reason shall lose one attendance point. The same will be the case if the professor decides that a student is late enough not to benefit adequately from a class. The maximum loss in this bonus *attendance points* is of course 5%.

|                |   |                    |
|----------------|---|--------------------|
| <u>GRADES:</u> | A | 90 – 100%          |
|                | B | 80 – Less than 90% |
|                | C | 70 – Less than 80% |
|                | D | 60 – Less than 70% |
|                | F | Less than 60%      |

### **TEST SCHEDULE/DATES**

Due dates for the homework and design problems will be given when they are assigned. Test dates to be determined.

Note: The Instructor reserves the right to make any necessary changes in this course program as the need arises.

### **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](http://www.bert.siu.edu), Department of Public Safety's website [www.dps.siu.edu](http://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.