

DEPARTMENT OF MECHANICAL ENGINEERING
UNIVERSITY OF KENTUCKY

ME 321
Spring 2008
Tagavi

Course Organization <http://courses.engr.uky.edu/ME/me321>

(All times EDT)

Lectures: TR 11:00 – 12:20, CRMS 309

Office, Tel #, email: 201 Main, 859-257-5872, kaveh@engr.uky.edu (**Please have all e-mails with the subject line that starts with ME321.**)

Office Hours: TR: 10-11am. Seeking help by phone or email is quite acceptable.

TA: Howard Chen HLCHEN2@uky.edu

Office Hours, Tel #: M 2-3, T 1-2, F 9-10, 012 RGAN, 859-257-6336 x 80674

Prerequisites (these prerequisites will be enforced r/vigorously):

ME 220, MA 214, and Engineering Standing. (UK)

Textbook: Yunus A. Cengel, Thermodynamics: An Engineering Approach, Sixth Edition, McGraw-Hill.

Course Description: Gas mixtures, air-water vapor mixtures. Air conditioning system design. Principles and design of energy conversion devices, power and refrigeration cycles. Principles of combustion, chemical equilibrium, one-dimensional gas dynamics. Nozzle design.

Course Outline:

Vapor and Combined Power Cycles	Ch 10 ¹
Refrigeration Cycles	Ch 11
Thermodynamic Property Relations	Ch 12
Gas Mixtures	Ch 13
Gas-Vapor Mixtures and Air-Conditioning	Ch 14
Chemical Reactions	Ch 15
Chemical and Phase Equilibrium	Ch 16
Thermodynamics of High-Speed Flow ²	Ch 17

¹Coordinated with Thermo I coverage. ²If time allows.

Course Outcomes:

By the end of this course, the student should be able to:

- Be familiar with technical terms used in thermodynamics and energy systems.
- Understand characteristics of different power cycles, calculate their efficiencies, and apply their basics to engineering problems.
- Understand characteristics of different refrigeration cycles, calculate their efficiencies, and apply their basics to engineering problems.
- Understand principles of combustion and chemical equilibrium and apply their concepts to practical engineering problems.
- Integrate knowledge on mass, momentum, and heat transfer, and thermodynamics.

Grading is based on the following:

Homework [10%] Assigned roughly every class period. Due the following Tuesday *before* the class begins. Grading is mostly done based on overall attempt. Homework solutions will be posted on the web on due dates. **Important:** (1) test problems will be similar to homework and other end-of-chapter problems.

Tests [90% = 67.5% problem type + 22.5% short conceptual questions] All tests are closed book and notes. A sheet of equations and access to property tables will be allowed for the problem type position. The conceptual part would be closed-everything. The exact date for Tests I and II will be announced one week in advance.

Test I: Chapters 10 and 11 (during class time.)

Test II: Chapters 12 and 13 (during class time.)

Test III: Chapters 14-16. (Put time/date here.)

(Actual test III might be shorter than the 2 hour allotted by the UK Registrar.)

The lowest test grade will be given 18% weight while the other two test grades will each be given 36% weight – total of 90%.

Course letter grade will be based on the following scale (raw scores will be rounded to the nearest tenth):

A = 90 – 100 B = 80 – 89.9 C = 70 – 79.9 D = 60 – 69.9 E = below 60

Statement on class decorum: Please refrain from activities that disturb the class or distract the instructor. Examples: snapping gums, reading newspapers, solving crossword puzzles, sleeping or putting your head down, coming late or leaving early, receiving phone calls, talking excessively with other classmates. If you engage in such activities, I must and will interrupt the activity.

Policy on absences: When you miss a class, it is your responsibility to ask the instructor, the TA, or other classmate what transpired that day. Only work/tests missed due to official excused absences will be allowed to be made up.

Statement on disability: Any student with a disability who is taking this course and needs classroom or exam accommodations should contact the Disability Resource Center, 257-2754, room 2 Alumni Gym, jkarnes@uky.edu.