Thermodynamics
ChE 3300 - Fall 2010
Department of Chemical Engineering and Materials Science
Wayne State University

Lecture:	3:30pm-5:20pm MW, 2507 ENG
Instructor:	Jeffrey J. Potoff Room 1111 Engineering (office); 2551 EDC (lab) (313) 577-9357 (office); (313) 577-9255 (lab) jpotoff@wayne.edu
Web Site:	http://www.blackboard.wayne.edu
Office Hours:	Monday and Wednesday 10:30am-12:00pm or by appointment
Pre-reqs:	CHE 2800, MAT 2020
Textbook:	Elliott, J. R. and Lira, C. T., "Introductory Chemical Engineering Thermodynamics," Prentice-Hall (1999) ISBN 0-13-011386-7.
Objectives:	In this course, students will: 1. Apply the first and second laws of thermodynamics to calculate heat and work interactions in closed, open, steady and unsteady state processes. 2. Learn how the thermodynamic variables U, H, G, A, S, P, V and T are related and use be able to use "thermodynamic math" to express them in terms of experimentally measurable quantities 3. Use equations of state to determine the PVT behavior, enthalpy and entropy of real fluids. 4. Predict multi-component phase equlibria of non-ideal systems utilizing fugacity and activity coefficient models as well as group-contribution methods, such as UNIFAC. 5. Develop teamwork and communication skills through group projects.
Grading:	Homework: **10%** Class participation and quizzes: **5%** Group project **15%** Exam #1 (First and second laws of thermodynamics): **15%** Exam #2 (Generalized analysis of fluid properties): **15%** Exam #3 (Phase equilibria in mixtures): **15%** Final Exam (Comprehensive): **25%**
Scale:	A: 100-85%, B: 84-70%, C: 69-55%, D: 54-35% **FINAL GRADES ARE NOT CURVED!**
Exam dates:	Exam I: October 4; Exam II: November 1; Exam III: December 6
Final Exam:	12/15/08 (Wednesday)

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Homework:	All homework is assigned at the beginning of the semester. Students may turn in homework any time before the due date listed on the schedule to receive full credit. Homework sets are expected to be neat, and written on only one side of "engineering paper." Homework submitted on loose leaf notebook paper and/or "double-sided" solutions will be returned to the student without grade.
Add/Drop	Students requesting a withdrawal from the course may do so for a documented medical condition that prevents the completion of the course. Students failing the course at the time of withdrawl will be given a mark of "WF".
Missed Exams	Students who must miss an exam for any reason are expected to contact the course instructor before the date of the exam. Valid excuses for missing an exam are: illness, car crash, death in the immediate family, and jury duty. Students must provide documentation (doctor's note, police report, death certificate, etc), before make-up examinations will be administered.
Attendance	Students are expected to attend all classes. Missed classes will result in a reduced "Class Participation" grade. Rain, snow, etc. are not valid excuses for missing class if the university is open.
Academic Ethics	Students are expected to do their own work in this course. Severe penalties are applied in cases of academic dishonesty. Examples of academic dishonesty and penalties can be found in Table 1.

1 Academic Ethics

Academic ethics are taken very seriously in this course. Students are expected to do their own work. You may certainly consult with other students for help on homework assignments and projects, however, the work that you submit for grading must be your own. The following are examples of academic fraud or "cheating" and will result in substantial penalties.

Table 1: Examples of academic dishonesty and penalties

Activity	Penalty
Copying homework from solution manual.	Semester homework grade of 0.
Copying homework from a classmate(includes spreadsheets!).	Score of 0 on that assignment.
Use of notes on closed book exams.	**Failing grade for course.**
Use of cell phones or other electronic communications during exams.	**Failing grade for course.**
Copying from another student during exam.	**Failing grade for course.**
Copying text from the Internet, or books, into project report.	30% reduction in project grade.
Copying text or calculations from another project report.	Score of 0 for project.

Additional disciplinary actions may also be taken. The student due process policy and information regarding academic dishonesty can be found at

`http://www.doso.wayne.edu/judicial/index.htm`

2 Expectations and Student Responsibilities

2.1 General

- Past surveys indicate 10-15 hours per week are needed to complete each homework assignment.
  - Students are urged to start their homework assignments on the day they are assigned.
- In the event of a holiday where the university is closed, homework is due on Wednesday when classes resume.
- Students are expected to consult other sources of information for help in completing the homework assignments. This includes, but is not limited to:
  - The course text.
  - Office hours.
  - Classmates.
  - The library.
- For exams, students are responsible for all material covered by the lecture and homework assignments.

2.2 Calculator

- Students are expected to own and know how to use a TI-83 or equivalent calculator (TI-84, HP48GX).
- This course will make extensive use of the equation solving capabilities of the TI-83 calculator.

- Students who own a calculator besides a TI-83, TI-84 or HP48GX will be responsible for self-teaching themselves how to use it.
- Although the TI-83 calculator is capable of solving complex problems, students are required to write detailed solutions on all exams and homework assignments.

2.3 Computer

- Students are expected to be familiar with MS Excel and Matlab.
- All course information will be posted at

  `http://www.blackboard.wayne.edu`

- Electronic communication with students will be through their WSU access ID.

2.4 Math

- Students are expected to be proficient in algebra, trigonometry. and basic calculus.