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Richard M. Felder and Ronald W. Rousseau  

OFFICE HOURS: Students are welcome (and encouraged) to come or call at other times. If I am in my office and not on the phone or with another student, I will make time for you. At minimum, we will arrange a time to meet that will accommodate both of our schedules.

OBJECTIVES

1. Introduce the fundamentals of the energy balances and their role in chemical processes.
2. Expand the understanding of the engineering approach to open-ended problems.
3. Develop the capacity to employ engineering judgment to assess the validity of answers.
4. Continue to develop the understanding of the importance of safety and environmental issues.

RESPONSIBILITIES

To succeed in this class, you should read the relevant material before coming to class, make a reasonable effort to do the assigned homework, hand in what you accomplish, and ask questions on points that you do not understand. I will lecture on points in the book and on supplemental topics, attempt to answer all serious questions, make myself available to anyone needing extra help, administer fair but demanding exams, and grade and return assignments in a reasonable time. All exams will be graded within a week.

GRADING:  
Two exams 50%  
Homework 10%  
Workshops 10%  
Comprehensive Final Exam 30%
ABSOLUTE GRADING SCALE

In this course we would like to create an atmosphere of positive cooperation between students. In addition, most of the exercises in this course will require you to work in teams and you will be expected to help each other learn the material. To encourage and support cooperative learning you will be graded on an absolute grading scale as given below. The net result is that it is in your interest to help your classmates become successful engineers. You will learn through teaching others.

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<th>University Point System</th>
<th>Percentage</th>
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POLICIES

1. Regular attendance is expected. You are responsible for all material whether you are in class or not.
2. Late work of any kind will not be graded.
3. Each student will be assigned to a collaborative study group. If every member of that group scores above 83 on an exam, each group member will receive four bonus points on the exam.
4. WORKSHOPS: These are in-class problem solving sessions. The class will be randomly divided into groups of 2 or 3 students. Problems related to the past week’s material will be distributed to each group. Each group will work on their problem, develop their solution, and submit the problem solution to the instructor. Groups may help each other, but each group must write up its own solution and submit it. All submissions are due 15 minutes before the end of the class period. After the submission, the instructor will present the solution to one of the assigned problem
5. HOMEWORK: Collaboration on homework is acceptable and encouraged, but all tests must be done independently. All students will periodically be asked to submit evaluations of how well their peers performed as team members. These evaluations will be used at the end of the
semester to adjust the final grading. Also, this periodic assessment will help identify problems in teams. The grade received on all team assignments is a “raw score”. Raw scores will be adjusted according to each individual’s contribution to the overall team effort. Each team member will be evaluated by every member of the team, including him/herself. The adjusted score (not the raw score) will be used in calculation of course grades. Thus, the student who consistently demonstrates a higher level of effort may be rewarded. Likewise, the student who does not contribute substantially to team assignments may be penalized. Therefore, be aware that the adjustment of grades for team assignments can substantially impact the overall course grade, either positively or negatively.

6. **HOMEWORK AND WORKSHOPS** will be collected and scored based on the following guidelines:
- **4 points** – Correct solution method, equations and tables properly cited, units clearly shown throughout the entire problem, and correct numerical answer.
- **3 points** – Correct solution method, equations and tables properly cited, units clearly shown throughout the entire problem, and incorrect numerical answer.
- **2 points** – Partially correct solution method, equations and tables properly cited, units clearly shown throughout the entire problem.
- **1 point** – Incorrect solution method.
- **1 point** – Equations and/or tables are NOT all properly cited.
- **1 point** – Units are missing in two or more instances.
- **0 points** – Problem not done.

7. **EXAMS**: Two equally weighted exams and a comprehensive final exam will be given. All exams will be open-book and notes unless otherwise announced. Absence at examination time is excusable only in case of well-documented illness of the student or similar emergency. An unexcused absence from an exam will result in a zero grade on that exam. If you feel that a test problem has been graded improperly (except for misadding points), you must resubmit the problem within 24 hours along with a written appeal and explanation. Upon receipt of this formal appeal, I will regrade the problem. This means that your score may go up or down.

8. **ACADEMIC MISCONDUCT**: Students are expected to act and work with the utmost professional behavior. Any student engaged in an act of academic misconduct, which includes but is NOT limited to, cheating, plagiarism, use of written or oral offensive language, tempering with other student’s files, and tempering with other student’s computer accounts, will receive a grade of F for the course. If another student is knowingly involved in the offense, he or she will receive the same penalty.

9. **STUDENTS WITH DISABILITIES**: If you have a documented disability that may have an impact on your work in this class, please contact me. Students must provide documentation of their disability to the Academic Success Center in order to receive official University services and accommodations. The Academic Success Center can be reached at 856-256-4234. The Center is located on the 3rd floor of Savitz Hall.
TENTATIVE SCHEDULE

1/17 Introduction, Syllabus Review, Basic Principles Chap 4-6
Team Selection
1/19 Chapter 4-6 problem solving Chap 4-6
1/24 First Law of Thermo, Kinetic and Potential Energy 7.1 - 7.2
1/26 Energy Balances on Closed Systems 7.3
1/31 Energy Balances on Open Systems 7.4 – 7.5
2/02 Energy Balance Procedures 7.6
2/07 Energy Balance Procedures cont. 7.6
2/14 UNIVERSITY CLOSED DUE TO BAD WEATHER
2/16 Chapter 8 intro + Change in Pressure 8.1 – 8.2
2/21 Review
Friday, February 23rd – Exam 1 (Chapter 7 (plus chaps 1-6))
2/28 Changes in Temperature and Heat Capacities 8.3
3/02 Exam Summary + Problem solving
3/07 Phase Change Operations – Example 8.4-2 8.4a, c
3/09 Problem solving
3/14 SPRING BREAK – No CLASS
3/16 SPRING BREAK – No CLASS
3/21 Humid Air 8.4 d, e
3/23 Workshop
3/28 Review
Friday, March 30th – Exam 2 (Chapter 8)
4/04 Exam Summary + Problem solving
4/06 Good Friday
4/11 Heats of Reaction 9.1
4/13 Hess' Law/Heats of Formation and Combustion 9.2 - 9.4
4/18 Energy Balances on Reactive Processes 9.5
4/20 Problem solving
4/25 Balances on Transient Processes 11.1 a, b
4/27 Material Balances on Transient Processes 11.2 a, b, c
5/02 Energy Balances on single-Phase non-reactive processes 11.3
5/04 Problem solving + Review

Final Exam: TBA