CHEE 2331
CHEMICAL PROCESSES
Spring 2016

01-LEC(16873) Mondays and Wednesdays, 1:00 PM - 2:30 PM L2D2

Instructor Dr. William Epling
Office Hours 10:30-11:30 Mondays and Wednesdays or by appointment

Textbook *Elementary Principles of Chemical Processes*, Richard M. Felder and Ronald W. Rousseau, Third Edition, John Wiley & Sons, New York, 2005
Please bring the textbook to every class.

Teaching Assistants: TBA, but office hours are expected to be scheduled daily

Topics: Introduction to chemical engineering calculations, unit equations, process stoichiometry, material and energy balances, states of matter, and case studies.
Tentative schedule

1. Introduction to the course - Chapter 1
2. Introduction to Engineering Calculations - Chapter 2
3. Processes and Process Variables - Chapter 3
4. Fundamentals of Material Balances - Chapter 4
5. Single-Phase Systems - Chapter 5
6. Multi-Phase Systems - Chapter 6
7. Energy and Energy Balances - Chapter 7
8. Balances on Non-Reactive Processes - Chapter 8
9. Balances on Reactive Processes - Chapter 9

PREREQUISITES: CHEM 1332, MATH 1432, and PHYS 1321
Students must fulfill the prerequisites (CHEM 1332, MATH 1432, and PHYS 1321) to take CHEE 2331, and *credit on your UH account or copy of official transcript is required*! If you are missing a pre-requisite, you may be dropped from CHEE 2331 *without notice and without concern of refund or inability to register in another class (e.g. after add/drop deadlines).*
Prerequisites by Topic:

1. Modern concepts using mathematics for understanding principles and fundamental laws of chemistry, atomic and molecular structure, states of matter, equilibrium, kinetics, and elementary inorganic, and organic chemistry.
2. Calculus of rational functions; limits, derivatives, applications of the derivatives, antiderivatives, the definite integral with applications, mean value theorem, fundamental theorem of calculus, numerical integration.
   Co-requisite: Calculus of transcendental functions; additional techniques and applications of integration, indeterminate forms, improper integrals.

Grading Scheme
There will be 3 "mid-term" exams and one final exam.

HW - 0%		
Exam 1 - 20%	Wednesday, February 17, 2016	
Exam 2 - 20%	Wednesday, March 9, 2016	
Exam 3 - 25%	Monday, April 11, 2016	
Final Exam - 35%	Thursday, May 5, 2016 → 5-8 pm	

Homework Homework will not be collected and therefore not graded. However, practice problems will be suggested/posted etc. Solutions to the ones I suggest will be posted on BlackBoard some time after the problems are posted.

Important Dates
Jan 19 (20 for us) - First day of classes
Feb 3 - Last day to drop a course or withdraw without a grade
Mar 14 – 19 - Spring Break
April 1 - Last day to drop or withdraw with a W
May 2 - Last day of classes

Notes

Students must arrange not to have any conflict with the scheduled exam dates. All students must take their exams on the scheduled dates.

Students are expected to attend all classes. Problems solved in class may be used in the exams.

E-cigarettes are NOT allowed in class.

Cell phone use is NOT allowed in class.

The UH Academic Honesty Policy is always in effect. Cheating on Exams will result in academic honesty hearings. These can lead to 0 on the exam, an F for the course, expulsion from Chemical Engineering or even the University of Houston. Here are a few examples (not complete) of cheating:

- Letting another student plagiarize your work.
- Changing answers on an Exam or Quiz after it has been graded, and then claiming instructor error.

Expected Student Outcomes:
Demonstrate ability to use units, dimensions, and data analysis. (a)
Demonstrate knowledge of basic process variables and how to measure them. (a)
Demonstrate ability to apply material balances to chemical engineering systems. (a,e)
Demonstrate ability to apply energy balances to reactive and non-reactive systems. (a,e)
Demonstrate knowledge of the basics of single-phase/multi-phase systems, including equilibria (a,e)

Tentative Schedule

Lecture #	Date	Topic
1	20-Jan	Intro
2	25-Jan	Engineering Calculations
3	27-Jan	Process Variables
4	1-Feb	Material Balances
5	3-Feb	Material Balances
6	8-Feb	Material Balances
7	10-Feb	Material Balances
8	15-Feb	Review
9	17-Feb	Exam 1
10	22-Feb	Single phase systems
11	24-Feb	Single phase systems
12	Feb-29	Multi-phase systems
13	2-Mar	Multi-phase systems
14	7-Mar	Multi-phase systems
15	9-Mar	Exam 2
16	21-Mar	Energy Balances
17	23-Mar	Energy Balances
18	28-Mar	Balances on non-reactive systems
19	30-Mar	Balances on non-reactive systems
20	4-Apr	Balances on non-reactive systems
21	6-Apr	Review
22	11-Apr	Exam 3
23	13-Apr	Balances on reactive systems
24	18-Apr	Balances on reactive systems
25	20-Apr	Balances on reactive systems
26	25-Apr	Balances
27	27-Apr	Review
28	2-May	Final from 2015

ABET Program Outcomes and Assessment
a. Ability to apply knowledge of mathematics, science, and engineering
b. Ability to design and conduct experiments, as well as to analyze and interpret data
c. Ability to design a system, component or process to meet desired needs
d. Ability to function on multi-disciplinary teams
e. Ability to identify, formulate and solve engineering problems

f. Understanding of professional and ethical responsibility
g. Ability to communicate effectively
h. Broad education necessary to understand the impact of engineering solutions in a global and societal context
i. Recognition of the need for, and an ability to engage in life-long learning
j. Knowledge of contemporary issues
k. Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice