

CH EN 4253 – Process Design I

Fall 2017 Syllabus

Meets MWF 9:40-10:30, WEB L102

INSTRUCTOR	Prof. Kevin Whitty kevin.whitty@utah.edu Office: MEB 3290 Office hours: Open door policy, or by appointment
ASSISTANTS	Bonan Wang bonan.wang@utah.edu TA hours: TBD
MEETING	Lecture MWF 9:40-10:30 Warnock Engineering Building (WEB) Room L102
TEXTBOOKS	<u>Required:</u> Seider, W.D., Lewin, D.R., Seader, J.D., Widagdo, S., Gani, R., Ng, K.M. Product and Process Design Principles , 4th ed. (2017) ISBN 978-1-119-28263-1 About \$125 (paperback) or about \$60 (eBook) on Amazon. <u>Required:</u> Green, D.W. and Perry, R.H. Perry's Chemical Engineers' Handbook , 8th ed. (2008) Note: Earlier editions are okay, but the information is not as up-to-date. ISBN 978-0-07-142294-9 About \$120 on Amazon or <u>free</u> via AIChE's Access Engineering library
WEB PAGE	Canvas
PREREQUISITES	C or better in CH EN 3603 (mass transfer) and 3553 (chemical reaction engg) AND full major status in chemical engineering
GRADING	Homework: 36% (nine each worth 4% of the grade) Canvas Quizzes: 9% Exam 1: 10% Exam 2: 15% Exam 3: 15% Project: 15%

At the end of the semester, all student scores will be normalized to the highest student in the class. For example, if the top student received 93% of the total points available, then all students' scores will be divided by 0.93. Once normalized, grades will be distributed according to the following scale:

95-100	A	85-89	B+	70-74	C+	50-59	D
90-94	A-	80-84	B	65-69	C	0-49	E
		75-79	B-	60-64	C-		

The instructor reserves the right to lower the scale (thus improving student grades) and to reevaluate the scores of students who just miss a grade. All grades are final and are not open to discussion. As with all classes, the best way to ensure a good grade is to actively participate in class, learn the material, turn in homework on time, work hard on the project and study for the exams.

HOMEWORK

There are nine homework assignments, each worth 4% of the overall class score. Homework assignments will be a combination of problems from the textbook, special problems, and design problems requiring Aspen, Promax or other process design software.

Homework must be submitted as a memo, including a cover page with key results identified, as though it were being submitted to a boss or division of a company. A portion of the homework score is based on professionalism in writing and presentation of solutions.

All homework is to be submitted through Canvas, uploaded as a single PDF file. Associated Excel, Aspen or Promax files should be uploaded as appropriate, named clearly and referred to in the main PDF document. However, the grader will base the grade on the PDF document. Homework must be uploaded and submitted by 11:59 PM on the day it is due. The policy for homework turned in late is as follows:

Turned in the day after it is due:	minus 50% of the grade
Turned in more than one day late:	no credit

Students should be able to independently set up, solve, and explain solutions all problems. Students are encouraged to discuss with other students about how to approach and solve the homework problems and develop process models. Although collaboration is encouraged, each student must perform his/her own work and submit a unique, individual memo report. No points will be given to students whose assignment submissions mirror those of other students.

A homework discussion session will be held at 4:30 pm approximately two days before the assignment is due. Check the Canvas calendar for more information.

EXAMS

There will be three exams. Exams are closed book. Each student will be allowed to bring to the test a single 8.5 x 11 inch piece of paper with notes written on both sides. To receive full credit for solutions to calculation problems, students must explain the approach used, state assumptions and show all work. The instructor reserves the right to fail a student that does not receive at least 50% of the maximum possible score on every test.

Make-up exams are given only in very exceptional circumstances. If a student is not able to be present during exam time, arrangements will be made for the student to take test at the University Testing Center. The Testing Center charges students a nominal fee for this service.

COURSE DESCRIPTION

Process design and engineering, including process synthesis, mathematical modeling of process equipment units, system calculation strategy, economic evaluation and optimization, process simulation.

**OTHER
SUGGESTED
MATERIALS**

Although not required for this course, the following books are very useful and would be a good investment for any engineer:

Taylor, J.R. *An Introduction to Error Analysis. The Study of Uncertainties in Physical Measurements*, 2nd ed.; University Science Books: Sausalito, CA, 1997. ISBN 0-935702-42-3. (About \$45 on Amazon.Com)

The ACS Style Guide. Effective Communication of Scientific Information; Coghill, A.M., Garson, L.R., Eds.; Oxford University Press: New York, NY, 2006. ISBN 0-8412-3999-1. (About \$45 on Amazon.Com)

ADA STATEMENT

The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations.

**ACADEMIC
MISCONDUCT**

All instances of academic misconduct will be handled in accordance with the Student Code (<http://regulations.utah.edu/academics/6-400.php>).

**ADDRESSING
SEXUAL
MISCONDUCT**

Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).

**ACCOMMODATIONS
POLICY**

Some of the writings, lectures or presentations in this course may include material that conflicts with the core beliefs of individuals. Please review this syllabus carefully to see if this course is one that you are committed to taking. If you have a concern, please discuss it with the instructor at your earliest convenience.

**ACADEMIC
POLICIES AND
DEADLINES**

Academic policies and guidelines from the College of Engineering, which include information about withdrawal procedures, are available online at www.coe.utah.edu/academics

COLLEGE OF ENGINEERING GUIDELINES

http://www.coe.utah.edu/wp-content/uploads/pdf/faculty/semester_guidelines.pdf

Fall Semester 2017

Appeals Procedures

See the Code of Student Rights and Responsibilities, located in the Class Schedule or on the UofU Web site for more details

Appeals of Grades and other Academic Actions

If a student believes that an academic action is arbitrary or capricious he/she should discuss the action with the involved faculty member and attempt to resolve. If unable to resolve, the student may appeal the action in accordance with the following procedure:

1. Appeal to Department Chair (in writing) within 40 business days; chair must notify student of a decision within 15 days. If faculty member or student disagrees with decision, then,
2. Appeal to Academic Appeals Committee (see <http://www.coe.utah.edu/current-undergrad/appeal.php> for members of committee). See II Section D, Code of Student Rights and Responsibilities for details on Academic Appeals Committee hearings.

Americans with Disabilities Act (ADA)

The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you need accommodations in a class, reasonable prior notice needs to be given to the instructor and to the Center for Disability Services, 162 Olpin Union, 581-5020 (V/TDD) to make arrangements for accommodations. All written information in a course can be made available in alternative format with prior notification to the Center for Disability Services.

Adding Classes

Please read carefully: All classes must be added within **10 academic days** of the beginning of the semester (**deadline: Friday, September 1st**). Late adds will be allowed September 2-September 11, requiring only the instructor's signature. Any request to add a class after September 11th will require signatures from the instructor, department, and Dean, and need to be accompanied by a petition letter to the Dean's office.

A \$50 FEE WILL BE ASSESSED BY THE REGISTRAR'S OFFICE FOR ADDING CLASSES AFTER September 11th. ***

Withdrawal Procedures

*See the Class Schedule or web for more details *** Please note the difference between the terms "drop" and "withdraw". Drop implies that the student will not be held financially responsible and a "W" will not be listed on the transcript. Withdraw means that a "W" will appear on the student's transcript and tuition will be charged. **

Drop Period – No Penalty

Students may DROP any class without penalty or permission during the FIRST TEN academic days of the term (Friday, September 1st).

Withdrawal from Full Term Length Classes

Students may WITHDRAW from classes without professor's permission until **Friday, October 20, 2017**. Beginning September 2nd until October 20th, a "W" will appear on the transcript AND tuition will be charged. Refer to Class Schedule, Tuition and Fees for tuition information.

Withdrawal from Session I & Session II

See the web page for details:

<http://registrar.utah.edu/academic-calendars/fall2017.php>

Withdrawals **after October 20th** will only be granted due to **compelling, nonacademic emergencies**. A petition and supporting documentation must be submitted to the Dean's Office, 1602 Warnock Engineering Building. Petitions must be received before the last day of classes (December 7, 2017).

Repeating Courses

When a College of Engineering class is taken more than once, only the grade for the second attempt is counted. Grades of **W, I, or V** on the student's record count as having taken the class. Departments enforce these guidelines for other courses as well (e.g., math, physics biology, chemistry). Attempts of courses taken at transfer institutions count as one attempt. This means a student may take the course only one time at the University of Utah. Courses taken at the University of Utah may not be taken a second time at another institution. If a second attempt is needed, it must be at the University of Utah. Please work with your department advisor to determine the value of repeating courses. Students should note that anyone who takes a required class twice and does not have a satisfactory grade the second time may not be able to graduate. It is the responsibility of the student to work with the department of their major to determine how this policy applies in extenuating circumstances.