

CHE 4253

Chemical Engineering Process Design and Safety

Fall 2018

Course time and place: TR 12:00-1:15, GLCH

Instructor: Prof. Miguel Bagajewicz
SEC, Room T-314

E-mail: bagajewicz@ou.edu Phone: (405) 360-5202-

I prefer e-mail and I respond within 24 hours. Use the phone for **really, really, really, REALLY** important issues

I have an open-door policy. Walk in my office every time you want, and I will interrupt whatever I am doing. In case you feel better having an appointment, arrange for one. Two important rules to talk to me:

Teaching assistant: Kayla Foley

Office: T222. Office hours: Mo: 9-12, Thu: 1:30-4:30 pm.

E-mail: kayla.foley@ou.edu

Important Dates

Final Day to Register	August 24
Final Day of Full Term Fall Classes	December 7
Early Progress Grading	September 28-October 16
<u>FINAL EXAMINATIONS</u>	
Final Exam Preparation Period	December 3-9
Final Examinations	December 10-14
<u>ADD/DROP</u>	
100% Reduction of Charges on Dropped Courses	August 20-31*
No Reduction of Charges on Dropped Courses after this date	August 31*
No Record of Grade on Dropped Courses	August 20-31
Final Day to Add a Class	August 24
Automatic Grade of W for Dropped Course(s) for Undergraduate students	September 4-November 9
Petition to College Dean to Drop Course(s) for Undergraduate Students (Instructor's Signature and Grade of W or F Required)	November 12-December 7
<u>AUDIT</u>	
Final Day to Change from Audit to Credit for Undergraduate students	August 31
Final Day to Change from Credit to Audit for Undergraduate students	August 31
Holidays and Vacation Days	
Labor Day Holiday	September 3
Thanksgiving Vacation	November 21-25

Texts

Mandatory Text: None. Notes will be distributed.

Reference Texts:-Turton, R., Bailie, R. C., Whiting, W. B., Shaeiwitz, J. A., and Bhattacharyya, D., *Analysis, Synthesis and Design of Chemical Processes*, Prentice-Hall, 4th ed., 2012.
-Chemical Process Design and Integration. R. Smith. Wiley (2005).
-Crowl, D.A., and Louvar, J. F., *Chemical Process Safety*, Prentice-Hall, 3rd ed., 2011

Book on reserve in the Engineering Library:

Peters, M. S., Timmerhaus, K. D., and West, R. E., *Plant Design and Economics for Chemical Engineers*, McGraw-Hill, 2003.

Course objectives:

1. Apply the principles of economic analysis to the design of chemical processes.
 - Equipment & Plant Costing. Fixed Capital Investment Assessment.
 - Operating Cost Assessment.
 - Use of available software for process equipment and overall project cost.
 - Profitability Assessment.
2. Conceptualize and analyze chemical processes.
 - Review of Systems without Recycle.
 - Review of the role of recycles and purge.
 - Use of simulators for individual equipment and for a flow sheet with recycle and purge.
3. Synthesize the flowsheet of a chemical process using process simulation software.
 - Hierarchy of design- reactor(s)- separation(s)-heat recovery-utilities.
 - Use of the simulator to aid the decision making.
4. Apply the principles of health, environment, and safety relevant to chemical processes for the assessment of risk.
 - Fires. Prevention and mitigation equipment (including relief valves).
 - Explosions
 - Toxicology
 - PFA and HAZOP studies
 - Pollution prevention

Quizzes and Tests

- *Quizzes will be short, most of the time multiple choice and as frequent as one per week.*
- *All tests and quizzes will be closed book and closed notes except when indicated; i-phones or computers will not be allowed.*
- *No makeup quizzes/tests unless justified by illness or other major problems.*

Projects:

- *Projects will be performed in groups. In principle, there will be two, one short, and one longer project where a lot of the material presented in class will be*
- *All of the work you turn in is expected to be of your own group. Verbatim or adapted copying of another group's work is forbidden; violators of this will be reported to the OU Office of Academic Integrity Programs*

Grading:

Quizzes	20%
Tests (2)	25%
Projects	20%
Final exam (comprehensive)	<u>35%</u>
	100%

Each quiz, test and project will be normalized to a 100 (At least one student will get that score). All quizzes, tests and projects will be averaged.

Test dates (tentative):

Hour exam 1: Thursday, September 27

Hour exam 2: Tuesday, November 20

Final exam: Tuesday, December 13, 1:30-3:30 pm, in GLCH 123 (Our classroom).

There will be no class on Thursday, September 13, when there is the Gallogly College of Engineering Career Fair.

Reasonable Accommodation Policy: Any student in this course who has a disability that may prevent the full demonstration of his or her abilities should contact me personally as soon as possible so we can discuss accommodations necessary to ensure full participation and facilitate your educational opportunities.

Religious Holidays It is the policy of the University to excuse the absences of students that result from religious observances and to provide without penalty for the rescheduling of examinations and additional required class work that may fall on religious holidays.

Adjustments for Pregnancy/Childbirth Related Issues: Should you need modifications or adjustments to your course requirements because of documented pregnancy-related or childbirth-related issues, please contact me as soon as possible to discuss. Generally, modifications will be made where medically necessary and similar in scope to accommodations based on temporary disability. Please see www.ou.edu/content/eoo/faqs/pregnancy-faqs.html for commonly asked questions.

Title IX Resources: For any concerns regarding gender-based discrimination, sexual harassment, sexual misconduct, stalking, or intimate partner violence, the University offers a variety of resources, including advocates on-call 24.7, counseling services, mutual no contact orders, scheduling adjustments and disciplinary sanctions against the perpetrator. Please contact the Sexual Misconduct Office 405-325-2215 (8-5, M-F) or OU Advocates 405-615-0013 (24.7) to learn more or to report an incident.

OU's basic integrity expectations for students and the various codes and procedures can be found on the web site of the Provost, at <http://integrity.ou.edu>.