

CHEN 2683 - Chemical Engineering Principles 1

Fall 2026 Syllabus, Section 01, CRN 40737,

Credit hours: 3

Instructor

Zhuanzhuan Xie

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Public Instructor Information

Instructor Title: Senior Lecturer

Instructor Professional Qualifications: Ph. D., Chemical Engineering, University of Kansas, 2013

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Course Description

2683. Chemical Engineering Principles 1. Engineering units and dimensions. Hydrostatics. Material balances for non-reacting and reacting processes. Ideal and non-ideal gas relationships. Ideal multi-phase equilibrium calculations. Prereq.: MATH 1571, MATH 1571H or MATH 1585H, CHEM 1515. 3 s.h.

Course Readings

Group	Title	Author	ISBN
Required	Elementary Principles of Chemical Processes	R. Felder, R. Rousseau, and L. Bullard	1119498635

Either 3rd or 4th Edition

The course readings are subject to change in the event of extenuating circumstances, research developments, current events, and/or to ensure better learning.

Tentative Schedule

Week of	Reading(s)	Proposed Topic	Due/To Prepare for Class
8/24	Chapter 2	Introductory; Units, force, weight, numerical calculation, dimensionless quantities, interpolation	Homework 1
8/31	Chapter 3	Mass, volume, flow rate and compositions	Homework 2
9/7	Chapter 3	Pressure and temperature	Homework 3 No class 9/7: Labor Day
9/14	Chapter 4.1-4.3	Balances and material balance	Quiz 1: 9/18, on Chapters 2&3 Homework 4
9/21	Chapter 4.4	Multiple-unit process material balances	
9/28	Chapter 4.5	Recycle and bypass	Homework 5
10/5	Chapter 4.6	Reaction stoichiometry	Exam 1: 10/9, on Chapters 2-4.5
10/12	Chapter 4.6	Multiple reactions	Homework 6
10/19	Chapter 4.7	Balances on reactive processes	Quiz 2: 10/23, on Chapter 4.6
10/26	Chapter 4.8	Combustion reactions	Homework 7
11/2	Chapter 5	Densities, ideal gases, equations of state, compressibility factor	Homework 8 Exam 2: 11/16, on Chapters 4.6-4.8
11/9	Chapter 6	Single-component phase equilibrium	No class 11/11: Veteran's Day

11/16	Chapter 6	Gibbs phase rule, and gas-liquid systems	Homework 9 Quiz 3: 11/20, on Chapter 5
11/23	Chapter 6	Multicomponent phase equilibrium	Homework 10 No class 11/25-11/27: Thanksgiving Day
11/30	Chapter 6	Solid and liquid systems	
12/7	Final Week	Final (Exam 3): 8-10 am on Friday, 12/11, on Chapters 5&6 Bonus questions: 8-10 am on Friday, 12/11, on all chapters	

The course schedule, policies, procedures, and assignments in this course are subject to change in the event of extenuating circumstances, by mutual agreement, and/or to ensure better learning.