

**Chemical Engineering 140**  
Chemical Process Analysis  
Fall 2013

**Instructor:** C.J. Radke 101E Gilman, 642-5204, radke@berkeley.edu  
Office Hours: Mon 3-4 p, Tues 3-4 p

**Teaching Assistants:** Gabriel Sanoja Head GSI. B71 Tan Hall, 643-2271, gesanoja@berkeley.edu  
Office Hours: Mon 9-10 a, Tues 1-2 p (420 Latimer)

GSI's Colin Burke ([colin.m.burke@berkeley.edu](mailto:colin.m.burke@berkeley.edu)), Christopher Ho ([hochrisr@berkeley.edu](mailto:hochrisr@berkeley.edu)), Jessica Nichols ([jessicanichols@berkeley.edu](mailto:jessicanichols@berkeley.edu)), Ksenia Timachova ([ktimachova@berkeley.edu](mailto:ktimachova@berkeley.edu))  
Office Hours: Mon, Tues 6-8 p (Chem Lib D)

Further consultation with either the instructor or the teaching assistants is available by individual appointment.

**Objectives:** To introduce the principles of mass and energy balances along with equilibrium and rate expressions. Application of these principles is made towards the solution of basic chemical engineering processing problems. This course is foundational for the chemical engineering curriculum.

**Text:** Required:  
Himmelblau and Riggs. *Basic Principles and Calculations in Chemical Engineering*. Prentice-Hall, 8<sup>th</sup> Ed. 2012.

Recommended (on 2 hr reserve in the Chemistry Library):  
R. M. Murphy, *Introduction to Chemical Processes*, McGraw Hill, 2007  
Felder and Rousseau. *Elementary Principles of Chemical Processes*. John Wiley and Sons, Inc. Ed. 2000.  
Duncan and Reimer. *Chemical Engineering Design and Analysis: An Introduction*. Cambridge University Press. 1998  
Russell and Denn. *Introduction to Chemical Engineering Analysis*. John Wiley and Sons, Inc. 1972.  
R. N. Shreve, *The Chemical Process Industries*. McGraw Hill, 1945.

**Description:** Analysis of chemical processes depends on the ability to construct balances on material and energy within a system. Subsequent courses in the curriculum will build on this skill by elaborating on the selection and nature of different terms in these balances. Class examples will be drawn from standard chemical engineering unit operations and processes, and some homework will be solved using spreadsheet and computational computer software. The text will be followed loosely, and students are encouraged to refer to other recommended texts when necessary.

**Course Grade:** The course grade will be determined by the following:

|                     |   |
|---------------------|---|
| Homework:           | 10% (lowest 2 scores will be dropped if course evaluations turned in) |
| Unannounced Quizzes | 5 %   |
| Design Report       | 15 %  |
| Midterm Exams (2):  | 20 % each (10/2, 11/6)  |
| Final Exam:         | 30 % (12/16)  |

**Homework:** Homework will be assigned on Monday of each week and will be due by the end of class on Wednesday one week later. No late homework will be accepted. Assignments, solutions, and handouts will be posted at the class website: <http://bspace.berkeley.edu/> go to Chem Eng 140 and then to Resources. For computer access in 175 Tan Hall (Chevron Instructional Computing Facility) type: User name: !chmfcheme140 Password: c@1chemicalfa13