

**Chemical Engineering 140**  
Chemical Process Analysis  
Fall 2017

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

**Teaching Assistants:** Lance Bettinson lance\_bettinson@berkeley.edu  
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Office Hours:  
Mondays 1-3 pm, 100 F Chem Lib  
Tuesdays 4 - 6 pm, 100F Chem Lib  
Thursdays 6 – 7 pm, 100F Chem Lib  
Announcements will be made in case of relocation.

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

**Objectives:** CBE 140 introduces 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:  
Felder and Rousseau. *Elementary Principles of Chemical Processes*. John Wiley and Sons, Inc. 3rd Edition, 2005.

Recommended (on 2 hr reserve in the Chemistry or Engineering Library):  
R. M. Murphy, *Introduction to Chemical Processes*, McGraw Hill, 2007  
Chem. Lib. Call Number: TP155.7.M87 2007

Himmelblau and Riggs. *Basic Principles and Calculations in Chemical Engineering*. Prentice-Hall, 8<sup>th</sup> Ed. 2012. Chem. Lib. Call Number: TP151.H5 2012

Duncan and Reimer. *Chemical Engineering Design and Analysis: An Introduction*. Cambridge University Press. 1998 Chem. Lib. Call Number: TP155.D74 1998

Russell and Denn. *Introduction to Chemical Engineering Analysis*. John Wiley and Sons, Inc. 1972. Chem. Lib. Call Number: TP155.R88

R. N. Shreve, *The Chemical Process Industries*. McGraw Hill, 1956.  
Kresge Engineering Lib. Call Number: TP145.S5 1956

**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 is only followed loosely; students are encouraged to refer to other recommended texts when necessary.

<b>Course Grade:</b>	The course grade will be determined by the following:	
	Homework:	10% (lowest 2 scores will be dropped if course evaluations are turned in)
	Design Report	15 %
	Midterm Exams (2):	22.5 % each ( <b>09/27, 11/01</b> ,location, time:TBA)
	Final Exam:	35 % ( <b>12/11</b> )

**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 bcourse website.

**Examinations:** There will be no regrades of examinations. Use of electronic devices with access to internet is not permitted.