

**ChE 349 – Spring 2017 - CLASS SCHEDULE (v. 1) – Issued January 19, 2017**

The sections listed below from the Fogler text are strongly recommended reading. I will not cover everything in class. ***You are ultimately responsible on quizzes and exams for the material I cover in class.*** Changes in **yellow** highlight.

<u>Meeting Date</u>	<u>DESCRIPTION</u>
	<b><i>Basic Reactor Design (liquid and gases, species balances)</i></b>
Jan. 19 (R)	Course Introduction – Reactor mole balances (Sections 1.1-1.5)
Jan. 23 (M)	Conversion, Reactor sizing (Sections 2.1, 2.2, 2.3.1, 2.3.2, 2.4, 2.6)
Jan. 26 (R)	Rate Laws (Sections 3.1-3.4), Stoichiometry (4.1, 4.2)
Jan. 30 (M)	Reversible reactions, Equilibrium (Appendix C)
Feb. 2 (R)	Isothermal Reactors (Sections 5.1, 5.2, 5.3.1, 5.4)
Feb. 6 (M)	Review problems (liquids – batch, CSTR, PFR)
Feb. 9 (R)	Review problems (gases – batch, CSTR, PFR)
Feb. 13 (M)	Review problems (batch, CSTR, PFR)
Feb. 16 (R)	<u>Quiz #1</u> (material thru Feb. 13)
	<b><i>Reactor Design (species &amp; energy balances)</i></b>
Feb. 20 (M)	Quiz review; Energy Balance (Sections 11.1-11.3, 13.1)
Feb. 23 (R)	Steady CSTR (Sections 12.4-12.5)
Feb. 27 (M)	Steady PFR (Sections 12.1, 11.4.2, 12.2)
Mar. 2 (R)	Adiabatic (Section 11.4.1), Equilibrium (Section 11.5.1)
Mar. 6 (M)	Review problems (steady CSTR, steady PFR)
Mar. 9 (R)	Review problems (steady CSTR, steady PFR)
Mar. 13, 16	<i>No class – Spring Break</i>
Mar. 20 (M)	<u>Quiz #2</u> (material thru Mar. 9 – species & energy balances for steady CSTR, steady PFR only); solutions posted on-line.

### ***Multiple Reaction Systems***

Mar. 23 (R) Sections 8.1-8.2, 8.5, 9.1, 12.6, 13.5;  
Power-law rate, PSSH, detailed mechanisms

Mar. 27 (M) *Drop Date; Group Project assigned (TBD)*

Mar. 30 (R) Finish Group Project assignment;  
Review problems (multiple reactions, mechanisms)

### ***Chemical Reactor Process Safety (species & energy balances)***

Apr. 3 (M) Batch; unsteady CSTR; safety (Sections 12.7, 13.2, 13.4)

Apr. 6 (R) Reactor safety continued – in class exercises

Apr. 10 (M) Review problems (batch, unsteady CSTR, multiple reactions)

Apr. 13 (R) Quiz #3 (material thru Apr. 10 – multiple reactions, unsteady CSTR or batch) – solutions posted on-line

### ***Catalysis – emphasis on heterogeneous***

Apr. 17 (M) Homogeneous catalysis (Sections TBD);  
Heterogeneous Catalysis (Sections 10.1-10.2)

Apr. 20 (R) Langmuir-Hinshelwood algorithm (Sections 10.2-10.3)

Apr. 24 (M) Heterogeneous Reactor design (Section 10.4.4)

Apr. 27 (R) Review problems

May 1 (M) Last class – Review problems

TBD *Group Project Due*

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TBD *Final Quiz* (location TBD; material through May 1 – Catalysis)