

## Tentative Schedule<sup>1</sup>

Date	Topics	Textbook	Problems	Course Manual
<b>January</b>				
26	Introduction to and overview of class and lab	Skim Chapter 2 and Chem 170 modules as a review		
28	<i>Quiz 1</i> ; Types of chemical reactions; Intro to thermodynamics	Chapter 7: 260-263		
30	Energy changes in chemical reactions; Calorimetry	Chapter 7: 263-274	Chapter 7: 10, 18, 21, 33, 34	
<b>February</b>				
2	Calorimetry, Enthalpy ( $\Delta H$ ); Enthalpy of atom combination	Chapter 7: 275-279	Chapter 7: 36ace, 39-41, 47-49	What Do We Mean by a $\text{Mol}_{\text{rxn}}$ ?
4	<i>Quiz 2</i> ; Lab Exercise 1			
6	Hess's law and $\Delta H$ for reactions	Chapter 7: 279-293	Chapter 7: 35, 51, 56, 59, 61, 63, 65, 71, 75	
9	Heats of formation	Chapter 7: 293-297	Chapter 7: 87, 88, 90, 96, 103, 106, 107, 112	
11	<i>Quiz 3</i> ; Entropy ( $\Delta S$ ); Free Energy ( $\Delta G$ )	Chapter 13: 572-583	Chapter 13: 6, 9, 11, 17, 19, 21-26	
13	Free Energy ( $\Delta G$ )	Chapter 13: 583-591, 604-605	Chapter 13: 27, 29, 30, 32, 34, 37, 42, 45, 47, 49, 53	
16	Lab Exercise 2			
18	<i>Quiz 4</i> ; Driving unfavorable reactions; predicting sign of $\Delta G$ , $\Delta H$ , $\Delta S$			
20	Reaction dynamics	Chapter 12: 540-544 Chapter 13: 594-599	Chapter 12: 84, 91 Chapter 13: 69-71, 73, 76, 78	
23	Free energy and equilibria	Chapter 13: 600-603	Chapter 13: 79, 81, 83, 90	
25	<i>Catch-up and Review</i>			

<sup>1</sup> This schedule is tentative and is subject to change. Any such changes will be stated in class. At all times, the schedule on the course's web-site takes precedence over this schedule.

<sup>2</sup> The textbook pages and problems listed are for the 3<sup>rd</sup> edition of the textbook.

Date	Topics	Textbook	Problems	Course Manual
27	<b>First Exam</b>			
<b>March</b>				
2	Lab Exercise 3			
4	Quiz 5; Thermodynamics of redox reactions	Chapter 12: 520-537	Chapter 12: 4, 13, 14, 33, 36, 44, 46, 61, 63, 68-71, 74	
6	Introduction to kinetics and equilibria	Chapter 10: 402-417	Chapter 10: 5, 7, 10, 14, 17, 19, 22, 24, 26, 27, 29	
9	Solving equilibrium problems	Chapter 10: 417-426, 451-455	Chapter 10: 32, 33, 35, 38-40, 43, 46, 48, 49, 53, 58 Chapter 10A: 1-5	Some Thoughts on Solving Equilibrium Problems
11	Quiz 6; Le Châtelier's principle; equilibrium constants for common types of reactions	Chapter 10: 427-432	Chapter 10: 63, 65, 67, 68	
13	Acids and bases; pH of monoprotic acids and bases	Chapter 11: 457-477, 481-490	Chapter 11: 8, 16, 19-21, 28, 31, 41, 51-53, 55, 64, 77, 85, 87-89, 93, 99, 100	Why Can We Ignore The Dissociation of Water When Solving pH Problems?
16	Lab Exercise 4			
18	Quiz 7; Fractional abundance of conjugate weak acids and bases			Relative Importance of a Conjugate Acid and Its Conjugate Base Ladder Diagrams – A Pictorial View of Equilibrium Chemistry
20	pH of polyprotic acids and bases	Chapter 11: 510-517	Chapter 11A: 1, 2, 9, 14	Polyprotic Acid-Base Systems
March 21-29	<b>Spring Break</b>			
30	Introduction to buffers How buffers work	Chapter 11: 490-495	Chapter 11: 112, 114, 116, 117, 120, 124	
<b>April</b>				
1	Quiz 8; Designing a Buffer			Designing a Buffer; Three Ways to Prepare a Buffer
3	review			
6	<b>Second Exam</b>			
8	Solubility equilibria	Chapter 10: 432-436	Chapter 10: 78, 91, 95-97, 100	

<b>Date</b>	<b>Topics</b>	<b>Textbook</b>	<b>Problems</b>	<b>Course Manual</b>
10	Effect of pH on solubility	Chapter 10: 436-440	Chapter 10: 109, 110, 121	Finding the Equilibrium Constant For a New Reaction
13	Complexation equilibria	Module 3: 1-14 <sup>2</sup>	Module 3: 11, 13, 15, 19, 21, 23, 25, 27, 29, 31	
15	<i>Quiz 9</i> ; Introduction to kinetics	Chapter 14: 614-618	Chapter 14: 2, 3, 7, 11	
17	Integrated rate laws and half-lives	Chapter 14: 618-624, 628-629, 631-639	Chapter 14: 15, 16, 24, 53-55, 57, 58, 60, 62, 64, 68, 70, 74	
20	Lab exercise			
22	<i>Quiz 10</i> ; Kinetics of reactions with multiple pathways			
24	review			
<b>27</b>	<b>Third Exam</b>			
29	Mechanisms of reactions and activation energy	Chapter 14: 624-629, 640-648	Chapter 14: 29, 33-39, 93, 95, 97, 98	
<b>May</b>				
1	Thermodynamic vs. kinetic control of reactions			
4	TBA			
6	TBA			

Final exam: Saturday, May 9, 8:30-11:30

<sup>2</sup> Module 3 is available at the Wiley Science Student Companion website as a free pdf file. The website is: <http://bcs.wiley.com/he-bcs/Books?action=resource&bcsId=2302&itemId=047165552X&resourceId=5300>