

CHEM 1031 FALL 2003—CLASS SCHEDULE*

Class	Dates	Reading	Topic (Silberberg, 3rd Edition)	Problems
1-4	W, 9/3 F, 9/5 M, 9/8 W, 9/10	Review 1-4 5.1-5.7	Introduction to Course. Chapter 5: Gases and the Kinetic-Molecular Theory. Historical development of the gas laws; atmosphere-biosphere gas interconnections; gas density and human disasters; hot air balloons, kinetic-molecular theory of ideal gas behavior; real gases; preparing ^{235}U for nuclear fuels <i>Structure and composition of the Earth's atmosphere; importance of ozone in the stratosphere; chemistry of the lower atmosphere (the troposphere). Supplementary material on the chemistry of the lower atmosphere (smog, acid rain, air pollution) is provided on the course web page.</i>	Review Chapters 1-4 and practice as many problems as possible. Do self-evaluation test for these chapters on the course web page. 5.6, 5.8, 5.9, 5.20, 5.23, 5.28, 5.38, 5.39, 5.44, 5.49, 5.52, 5.55, 5.58, 5.62, 5.63, 5.65, 5.69, 5.71, 5.72, 5.77, 5.78, 5.81, 5.105, 5.110
5-8	F, 9/12 M, 9/15 W, 9/17 F, 9/19	6.1-6.6	Chapter 6: Thermochemistry: Energy Flow and Chemical Change. Energy and chemical reactions; energy content of fat and carbohydrates; the environmental impact of burning fossil fuels <i>The future of energy use, global warming, alternative energy sources, energy conservation (supplementary material provided on course web page)</i>	6.1, 6.8, 6.11, 6.17, 6.18, 6.19, 6.24, 6.29, 6.35, 6.37, 6.42, 6.44, 6.45, 6.47, 6.48, 6.50, 6.54, 6.58, 6.63, 6.66, 6.69, 6.70, 6.72, 6.78, 6.80, 6.84, 6.110, 6.113
9-12	M, 9/22 W, 9/24 F, 9/26 M, 9/29	7.1-7.4	Chapter 7: Quantum Theory and Atomic Structure. Historical development of the modern quantum mechanical model for atomic structure; rainbows and diffraction of light; spectra in chemical analysis Review & problem solving	7.2, 7.9, 7.12, 7.13, 7.16, 7.17, 7.20, 7.22, 7.23, 7.29, 7.31, 7.34, 7.35, 7.37, 7.39, 7.45, 7.47, 7.48, 7.49, 7.52, 7.55, 7.60, 7.79, 7.94
13	W, 10/1		EXAM 1 (Covers chapters 5-7, associated reading, homework problems, & lab experiments 3-5)	
14-16	F, 10/3 M, 10/6 W, 10/8	8.1-8.5	Chapter 8: Electron Configuration and Chemical Periodicity. Atomic structure and the periodic table (one of the greatest achievements in science); predicting chemical reactivity; magnetism of metals	8.6, 8.8, 8.9, 8.10, 8.11, 8.18, 8.19, 8.22, 8.25, 8.35, 8.40, 8.44, 8.47, 8.49, 8.54, 8.56, 8.61, 8.62, 8.69, 8.76, 8.78, 8.81, 8.86, 8.88, 8.89, 8.95, 8.103
17-19	F, 10/10 M, 10/13 W, 10/15	9.1-9.5	Chapter 9: Models of Chemical Bonding. The basis for classifying the matter in our world as ionic, molecular, or metallic; insights of G. N. Lewis and Linus Pauling	9.4, 9.6, 9.8, 9.10, 9.12, 9.14, 9.17, 9.22, 9.24, 9.26, 9.28, 9.30, 9.33, 9.39, 9.41, 9.45, 9.48, 9.52, 9.54, 9.56, 9.58, 9.67, 9.70, 9.81
20-22	F, 10/17 M, 10/20 W, 10/22	10.1-10.4	Chapter 10: The Shapes of Molecules. The Lewis and VSEPR models are simple to use and amazingly powerful in predicting the shapes of molecules; molecular shape, biological receptors, and the sense of smell	10.1, 10.2, 10.3, 10.4, 10.6, 10.10, 10.11, 10.13, 10.17, 10.21, 10.26, 10.30, 10.33, 10.35, 10.37, 10.40, 10.43, 10.46, 10.49, 10.50, 10.53, 10.62, 10.64, 10.67, 10.70, 10.79, 10.84

23-25	F, 10/24 M, 10/27 W, 10/29	11.1-11.3	Chapter 11: Theories of Chemical Bonding. Hybrid orbitals and orbital overlap models are used to explain chemical bonding; delocalized pi bonds in organic and biological molecules Review & problem solving	11.1, 11.7, 11.8, 11.9, 11.19, 11.24, 11.25, 11.30, 11.32, 11.34, 11.40, 11.42, 11.54, 11.57
26	F, 10/31		EXAM 2 (Covers chapters 8-11, associated reading, homework problems, & lab experiments 6-8, 10-III/IV)	
27-31	M, 11/3 W, 11/5 F, 11/7 M, 11/10 W, 11/12	15.1-15.6	Chapter 15: Organic Compounds and the Atomic Properties of Carbon. The special chemistry of carbon; molecules of living systems; synthetic vs. natural organic polymers and their impact on modern society; petroleum, coal, and natural gas—fuel or feed stocks for polymers? Do we need to make a choice?	15.6, 15.8, 15.10, 15.11, 15.14, 15.16, 15.25, 15.29, 15.30, 15.42, 15.60, 15.66, 15.68, 15.71, 15.79, 15.84, 15.86, 15.87, 15.95, 15.97, 15.111
32-36	F, 11/14 M, 11/17 W, 11/19 F, 11/21 M, 11/24	12.1-12.7, 14.6	Chapter 12: Intermolecular forces: liquids, solids, and phase changes. Intermolecular forces; introduction to the liquid and solid states of matter; a kinetic-molecular view of phase changes; the liquid state; H-bonding and the structure of DNA; everything you want to know about water; the striking beauty of crystalline solids; X-ray diffraction; silicate minerals and silicone polymers; nanostructures	12.2, 12.4, 12.5, 12.6, 12.32, 12.34, 12.37, 12.38, 12.41, 12.43, 12.47, 12.49, 12.52, 12.61, 12.65, 12.71, 12.73, 12.77, 12.82, 12.85, 12.86, 12.87, 12.91, 12.93, 12.99, 12.104, 12.119, 12.139, 14.83, 14.85, 14.88
37-41	W, 11/26 M, 12/1 W, 12/3 F, 12/5 M, 12/8	13.1-13.6	Chapter 13: The Properties of Mixtures: Solutions and Colloids. Solution energetics; factors affecting solubility; colligative properties; colloids; chemistry in pharmacology; waxes for home and auto; skuba diving and soda pop; colligative properties in industry and biology NO CLASS on Friday, 11/28 (Thanksgiving Holiday) Review & problem solving	13.7, 13.9, 13.11, 13.13, 13.16, 13.23, 13.24, 13.26, 13.30, 13.35, 13.38, 13.40, 13.50, 13.52, 13.56, 13.60, 13.64, 13.68, 13.70, 13.79, 13.82, 13.86, 13.88, 13.94, 13.102, 13.107, 13.108, 13.130
42	W, 12/10		EXAM 3 (Covers Chapters 12, 13, 15, associated reading, homework problems, lab experiment 9, 10-I/II and the crystal structures lab)	
43	F, 12/12		General review	
	Tu, 12/16		Comprehensive FINAL EXAM (8:00 am-10:00 am)	

*Note: This schedule will be adhered to as closely as possible, but some changes may be necessary. Remember, you are responsible for any announcements made in class! You should do at least the problems listed under assignments. If you have difficulty with any of the assigned problems, you should look for other similar problems in the text and do those also. Working problems is the best way to study for this course and most other courses in physical science and engineering. Specific information for each exam will be announced in class.