

Course Syllabus

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Required Materials for Chem 1A (Fall 2017):

Atoms and Energy: A Pathway in Chemistry (Great River Learning: <http://www.grtep.com/>): ↗ This learning platform contains the course text, homework problems, weekly review problems, and the exam database, along with a calendar and class announcements. You can purchase this directly from the publisher at the link above – make sure to enter your discussion section for the course.

iClicker/Reef: Students must purchase either an iClicker (available at the ASUC store) or have the Reef app enabled on an internet-capable device for the course and register it to the course. These systems will be used to take attendance in class.

Zoom: Students should create a free Zoom account (<https://zoom.us/>) ↗ using their Berkeley email address for online office hours and discussions. A guide to using online office hours can be found [here](#).

How to Use bCourses: bCourses will contain the course schedule (below), syllabus, homework and review problem solutions (in Files), along with grades, and lecture slides (also in Files). Important announcements will come through the site, and office hours will be posted.

Course Material Schedule & Reading List:

Week	Date	Topic	Atoms and Energy Readings	Lecture #
1	W 8/23	Atoms, Molecules, Stoichiometry	Sections 1.1 - 1.3	1
	F 8/25	Atomic Structure, Molecular Formula	Sections 1.3 - 2.1	2
	M 8/28	Light Waves, Absorption, Emission	Section 2.2	3
2	W 8/30	Light Waves, Particles, Photons	Sections 2.2 - 2.3	4
	F 9/1	Matter Waves, QM, Particle in Box	Section 2.3 - 3.2	5
	M 9/4	Academic Holiday		
3	W 9/6	H Atom, Orbitals, Energy Levels	Sections 3.1 - 3.3	6
	F 9/8	Spin, Pauli, Multi-Electron Atoms	Section 3.2	7

	M 9/11	Atomic Spectra, Shielding, IE	Sections 3.1 - 3.3	8
4	W 9/13	Periodic Trends, IE, EA	Sections 4.1 - 4.4	9
	F 9/15	Midterm 1 Review		10
	M 9/18	Chemical Bonds, Lewis Structures	Sections 4.2 - 4.5	11
		Mid-Term Exam 1	Tuesday 09/19 7-9	
5	W 9/20	Resonance, Charge, Bond Order	Section 5.1	12
	F 9/22	Molecular Structure, VSEPR	Sections 5.2-5.3	13
	M 9/25	Hybridization, VB, Orbitals	Sections 5.4-6.1	14
6	W 9/27	Bonding, Molecular Orbitals	Sections 6.2-6.3	15
	F 9/29	Multi-Atom Orbitals, Delocalization	Section 6.4	16

	M 10/2	Ideal Gas Law, Isotherms	Section 7.1	17
7	W 10/4	Kinetic Theory of Gases, Absolute T	Sections 7.1 - 7.2	18
	F 10/6	Real Gases, Phase Transitions	Sections 7.2 - 7.3	19
	M 10/9	Thermochemistry, Heat of Reaction	Section 8.1	20
8	W 10/11	Bond Energy	Sections 8.2 - 8.3	21
	F 10/13	Midterm 2 Review		22
	M 10/16	Thermodynamics, Heat Capacity	Sections 8.3 - 8.4	23
		Mid-Term Exam 2	Tuesday 10/17 7-9 PM	
9	W 10/18	Entropy, Second Law 2	Section 9.1	24
	F 10/20	Free Energy, Direction of Change	Section 9.2	25

	M 10/23	Equilibrium, Mass Action	Section 9.3	26
10	W 10/25	Le Chatelier	Section 10.1	27
	F 10/27	Free Energy, Equilibrium Constant	Sections 10.2 - 10.3	28
	M 10/30	Acids and Bases 1 (Strong)	Section 11.1	29
11	W 11/1	Acids and Bases 2 (weak)	Sections 11.2 - 11.3	30
	F 11/3	Acids and Bases 3 (titrations)	Section 12.1	31
	M 11/6	Acids and Bases 4 (buffers)	Section 12.2	32
12	W 11/8	Midterm 3 review		33
	F 11/10	Academic Holiday		
	M 11/13	Acids and Bases 5 (polyprotic and amino)	Section 12.1	34

		Mid-Term Exam 3	Tuesday 11/14 7-9 PM	
13	W 11/15	Heterogeneous Equilibrium	Section 12.2	35
	F 11/17	Electrochemistry 1	Section 13.1	36
	M 11/20	Electrochemistry 2	Section 13.2	37
14	W 11/22	Academic Holiday		
	F 11/24	Academic Holiday		
	M 11/27	Electrochemistry 3		38
15	W 11/29	Nuclear Chemistry - Seaborg Lecture		39
	F 12/1	Final Exam Review		40
		Final Exam	Wednesday 12/13 8- 11AM	