

**COLLEGE CHEMISTRY I (Chmy 141-001)**  
**Fall 2009 Tentative Syllabus**  
**MWF 0810-0910 SCI AUD**

Instructor: Dr. Will Wickun  
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Text: *Chemistry, The Central Science*, 11<sup>th</sup> ed; Brown, LeMay, Bursten, Murphy; PCP (2009)

Philosophy of Course: First year course with a corequisite laboratory for science majors/minors, pre-engineering, and allied health students. (Not intended for pre-nursing!) The course introduces the fundamental concepts of chemistry, including atomic and molecular structure, stoichiometry, and chemical bonding and the laws governing relationships of the elements and compounds. Although higher math is not required for comprehension and calculations, you must have taken at least College Algebra (Math 105) or satisfactorily passed the math placement exam. The math techniques used include basic algebra and some exponents and logarithms but common everyday arithmetic will suffice for the majority of the problems.

Examinations: For your planning purposes (and mine), the four exams will be administered on the dates specified. You may use a calculator. Books, bags, packs, and cell phones will be left in the lobby of the Science Auditorium prior to the exam.

Make-Up Exams: An unauthorized absence from an exam will result in a grade of zero unless you have a signed excuse from an MD, a law enforcement agent, or your next-of-kin. Get the point? There are valid reasons to miss an exam, but not many. In the event of an excused absence for a pre-planned reason, athletic team travel, serious injury, death in the immediate family, etc.), it is your responsibility to inform me BEFORE the exam and make up the work prior to the absence if at all possible. Be aware that make up exams are more rigorous than the original exam!

Comprehensive Final Exam: *Mandatory* at 1400-1550 Monday 14 Dec 2009.

Homework: Homework will be assigned and worked through [www.masteringchemistry.com/](http://www.masteringchemistry.com/). The homework is not only for grade, but also for YOUR academic benefit and I expect that you will at least *attempt* every problem. Historically, students who work and understand the problems will perform well on the exams and in the course overall.

Help: I *strongly* encourage you to see me anytime you are not certain that you understand a particular problem or topic. Many times only a small nudge is necessary to get you going. I may also schedule informal help sessions on an as-need basis. If you are struggling with the material, it would be prudent to attend.

<u>Grading:</u>	4 Hour exams	400 points
	Mastering Chemistry Homework	200
	<u>Comprehensive Final Exam</u>	<u>150</u>
	TOTAL:	750 points

There is no "curve" in the course, but final grades MAY be normalized. If so, this will not occur until after the final exam and will never lower a student's grade. Individual exams will not be "curved."

Grading System and Letter Grade Equivalent: The following scale is tentative and MAY be adjusted.

93-100 A	83-87 B	73-77 C	60-67 D
90-92 A-	80-82 B-	70-72 C-	0-59 F
88-89 B+	78-79 C+	68-69 D+	

Extra Credit Work: The four exams, the homework, and the final exam provide necessary and sufficient opportunities for successful completion of this course. (i.e., there is no "extra credit.")

Incompletes: An incomplete is not intended as a “golden parachute” for failure to perform. Incomplete grades in this course are assigned only if the student is prevented from completing a significant portion of his/her coursework due to family or medical emergency. The student must petition the Dean, CAS prior to receiving my consideration for an incomplete grade.

Outcomes Assessment: The course is lecture-based; therefore, Outcomes Assessment will be determined entirely upon the hour exam, the homework, and the final exam grades.

**POLICY ON ACADEMIC HONESTY:** It is your responsibility to familiarize yourself with the Student Affairs Handbook. In particular, you should understand Part IX, B1 (Academic Misconduct.) All students are expected to adhere to the highest standards of academic honesty and refrain from any action that is dishonorable or unethical. In all examinations and other graded work, students are expected to submit their own work entirely. Cheating or *alleged* cheating on work in this course will result in a grade of zero (failure) or the work involved. *There are no second chances! I take a very dim view of dishonesty in any form!*

#### SUGGESTIONS FOR STUDYING AND LEARNING CHEMISTRY

1. Keep up with your study every day. If you fall behind, it's very difficult if not impossible to catch up. Perseverance is the key to success in this course!
2. Skim topics **before** we cover them in each lecture. Sure, it may seem like a pain, but do you want to learn the material?
3. Take good lecture notes. This is easier said than done. Using lecture notes in conjunction with the text will be the best way to determine which material to study.
4. As soon as possible after lecture, carefully read the topics covered in class. As a quick self-test, if you can't verbally describe a concept to me or to your classmate, then you simply don't know it!
5. Attempt all assigned homework problems in Mastering chemistry. You will not learn by only watching me work a problem in class. As learning to ride a bicycle or a horse, you have to get in the saddle and maybe even fall off a few times.
6. It is **strongly** recommended that you form study groups early on.
7. Spending more than 15 – 20 minutes on a particular problem is rarely effective unless the problem is particularly long and challenging. What to do? Get the most “bang” for your tuition “buck” – seek assistance from the TA or me.

Day	Sections	Topics
1	1.1 – 1.3	Introduction, classifications of matter, properties of matter
2	1.4 – 1.5	Units of measurement uncertainty in measurement,
3	1.6	Dimensional analysis
4	2.1 – 2.4	Atomic theory of matter, atomic structure, modern view of atom
5	2.5 – 2.7	Periodic table, molecular compounds, ionic compounds
6		<b>EXAMINATION #1 – Friday 25 Sep</b>
7	3.1 – 3.2	Chemical equations, simple patterns of chemical reactivity
8	3.3 – 3.4	Formula weights, Avogadro's number and the mole
9	3.5 – 3.6	Empirical formulas from analysis, stoichiometry
10	3.6 – 3.7	Stoichiometry (cont'd), limiting reagents, theoretical yields
11	4.1 – 4.2	General properties of aqueous solutions, precipitation reactions
12	4.3 – 4.4	Acid-base reactions, oxidation-reduction reactions
13	4.5 – 4.6	Concentrations of solutions, solution stoichiometry
14	4.6	Solution stoichiometry (cont'd)
15		<b>EXAMINATION #2 – Friday 16 Oct</b>
16	10.1 – 10.3	Characteristics of gases, the gas laws
17	10.4 – 10.6	Ideal-gas equation, further applications, gas mixtures and partial
18	10.7 – 10.9	Kinetic-molecular theory, effusion/diffusion, real gases
19	5.1 – 5.2	Nature of energy, 1 <sup>st</sup> law of thermodynamics
20	5.3 – 5.4	Enthalpy, enthalpies of reaction
21	5.4 - 5.5	Enthalpy, enthalpies of reaction, Calorimetry
22	5.5 – 5.7	Calorimetry, Hess's law, enthalpies of formation
23		<b>No Class – Instructor not available</b>
24	5.7	Cont'd
25		<b>EXAMINATION #3 – Monday 9 Nov</b>
		<b>Veteran's Day – No Classes</b>
26	6.1 – 6.3	Wave nature of light, quantized energy/photons, spectra and Bohr model
27	6.4	Wave behavior of matter
28	6.5 – 6.7	Quantum mechanics, representations of orbitals, electron configurations
29	6.8 – 6.9	Electronic configurations and the periodic table
30	7.1 – 7.3	Development of periodic table, $Z_{\text{eff}}$ , electron shells and size of atoms
		<b>THANKSGIVING BREAK</b>
31	7.3 – 7.6	Ionization energy, electron affinity, metals, nonmetals, metalloids
32		<b>EXAMINATION #4 – Wednesday 2 Dec</b>
33	8.1 – 8.2	Chemical bonds, Lewis symbols, octet rule
34	8.3 – 8.6	Covalent bonds, bond polarity/electronegativity, Lewis structures
35	8.7 – 8.9	Resonance structures, exceptions to octet rule, strengths of covalent bonds
36		Review for Final Exam
<b>This syllabus is subject to change without advanced notice. I will notify you ASAP.</b>		