The Chemistry of Living Things

Class Location: SM 319
Meeting Time: Sec 001 MW 2-3:15, Sec 002 MW 3:25-4:40, Sec 003 TTH 3:05-4:20

Instructor: Dr. Judy Krueger
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Office hours: M & W 11-12, T 10-11, Th 9:30-10:30, F 10-10:30 and by appointment.

Materials for lecture: (1) Casio *fx*-260 solar calculator, (2) Raymond, K. *General, Organic and Biological Chemistry: An Integrated Approach.* 2010. John Wiley & Sons.

Objectives: Students will develop an understanding of the chemical processes carried out by living things. Students will demonstrate mastery of the material by solving written and lab problems on these topics and by being able to describe the major chemical jobs that living things perform. Emphasis is on kinetic and equilibrium approaches to solve problems. This course is designed for non-science majors.

Class Organization: The purpose of the lecture is to present topics in sufficient detail for students to be able to solve basic chemistry and biochemistry problems. Recitation will be used both to present new material in the form of written, modeling, or problem based exercises and to **provide practice on problems** introduced in lecture. A minor aspect of recitation will involve review of previous laboratory work and brief introductions to future laboratory experiments. The laboratory exercises are used to reinforce the principles developed in lecture, and to acquaint students with some of the techniques used in a chemistry lab.

Recommendations for success in CHM 109

1. Read any assigned material ***before*** you come to lab/recitation/lecture.
2. Ask questions during lecture, recitation, and lab when you do not understand.
3. Do practice problems (located on web page and/or appendix II lab manual) and the assigned homework questions. **SI program.**
4. Get help with the questions you did not understand**. SI program!!!**
5. Go over the study guide 5-7 days before the exam. Allow enough time to develop ***understanding*** in weak areas identified from homework and the study guide.
6. Get help on study guide questions you did not understand. **SI program!!!**
7. Carefully review your graded exam when it is returned to you. If you still do not know how to answer an exam question at this stage, see me or others for help.

CHM 109 is likely to be a relatively labor intensive and to be different than other science courses you may have taken! It will involve considerable problem solving and math

Attendance: You will be held responsible for all material covered in lecture. Lecture quizzes **cannot** be made up. Tests/Exams can be made up only if missed for a good reason permitted by your instructor, (See details below.) All labs must be performed this semester. The lowest lab grade of the semester will be dropped (see lab syllabus).

Homework, Exam, etc. details.
Note: For all quizzes, exams etc, you must bring and use your own Casio *fx*-260 solar calculator.

1. Homework. Each homework assignment will have ~ 1 to 2 point value. These assignments will be designed either to test your understanding (problem solving!) of a subject and/or whether you can identify terms, figures, *etc.* that have been covered in lecture. The policy for grade reduction on late homework is: **10% subtraction of credit** for work that is no more than 4 days late. After that there will be a **20% subtraction of credit.** No assignments will be accepted after graded work is first returned to any 109 class (usually ~1 week.) Assignments must be submitted as hardcopy. Do not email homework. ***Take care to do your own work!!!*** (*An* **XF grade** *indicates that the student has failed the course as a result of an honor code violation.*)

2. Midterm Exams. * The main objective of these exams will be to test your understanding of the concepts and ability to solve problems. Generally, the emphasis will be on problem solving, *not memorization.* However, for the more descriptive areas, more memorization is required. If you have missed an exam for a legitimate reason, you will be permitted to take a ***cumulative makeup exam*** outside of lecture time during the last week of class. A legitimate reason for missing an exam includes physical illness (not just a runny nose) or severe emotional trauma, such as the death of a close relative. Documentation for your absence is required. As soon as you suspect that you may not be able to take an exam, contact me by phone or e-mail to make sure that your absence from the exam is for an appropriate reason. **There is no option to drop any of the midterm exam grades.**

3. Final exam. * The final exam will be cumulative, but will have a slightly heavier emphasis on the last material not covered by a midterm exam.

4. Quizzes. These will be very brief, sometimes unannounced. Quizzes cannot be made up if you miss them. The lowest quiz score will be dropped.

5. Lab/recitation. See lab/rec syllabus. Turning in a lab report for a lab you did not attend is considered a violation of the student honor code.

6. Missed work. A zero is assigned when work is missed due to an unexcused absence.

*During exams, book bags and other materials are to be placed along the front wall, all cell phones and pagers etc. must be turned off and ball caps must be removed. You may not leave the room during an exam. If you leave, you are automatically finished with the exam. Do not be late for an exam, as you will not be given additional time.

Civility/Behavior guidelines: *civility*- politeness, consideration, courtesy.
Items related to lecture and (usually) recitation: Also see the 2011-2012 Student Handbook, pp. 132-138.

1. Get to class on time. If you are late, try to sit near the door. Do not walk across the front of the room.
2. When class starts, stop any conversation and turn your full attention to class.
3. I very seldom end class early or run over the allotted class time. Do not start shuffling papers, loading your book bag, *etc.*, before class ends. The noise disrupts class.
4. If you know you must leave class early (e.g. doctor's appointment) sit near the door to reduce disruption.
5. Turn off all electronic devices (cell phones, beepers, watches, mp3 players, etc.) that generate sound when you come into class.
6. Laptops, electronic notebooks, etc, including any device that connects to the web may not be use in class unless it is part of an accommodation as indicated by Disability services.
7. Do not come to class if you are not going to be involved.
8. Dress code: On exam days you may not wear sunglasses or a hat that has a bill or brim in the front (I will allow exceptions for documented religious reasons.) See also lab information for appropriate dress for lab.

Remember: The reason for the civility requirements is that you are not the only student in class. The other students have paid a lot of money to be here. You are hurting their education and perhaps eventually their ability to make a living if you are disrupting class.

Explanation of Grade Determination and Exam Structure

Grade determination. You will receive numerical grades for all of the work you do during the semester. The sum of these numerical grades will be used to assign the letter grade that goes on your transcript.

ACTIVITY	POINT VALUE
Homework	10
Exams I, II, III	38
Final Exam	24
Quizzes/other	3
Laboratory	25
Total	100

Anticipated grading scale: A $\geq$89.0, B+ $\geq$ 86.0, B $\geq$ 79.0, C+ $\geq$ 75.0, C $\geq$ 68.0, D+ $\geq$ 65.0, D $\geq$ 58.0
Note: Grades are rounded to the nearest tenth of a point.

Lecture Schedule Sec 001 & 002* (MW)

Week	Date	Topic	**Chapter** and pages
1	1/9 1/11	Syllabus, Introduction (PKU) Measurement	**1** p 9-22
2	1/16 1/18	MLK Day, No class Measurement , Science & Chemistry	**1** p 4-8 and 5 p160
3	1/23 1/25	Science & Chemistry Atomic Structure	**2** p 24-42, 46-48, 50-51
4	1/30 2/1	Compounds Compounds	**3** p 76-88 and **4** p 100-110 and **6** p 190
5	2/6 2/8	Weak Interactions Weak Interactions, Solutions	**6** p 176-189 and **4** p 111-112 **6** p. 190-191, 194-197, 202-203, 206-207
6	2/13 2/15	Solutions, Mole/Stoichiometry **Exam I**	**3** p 89-91 and **5** 153-156
7	2/20 2/22	Chemical Reactions Chemical Reactions,	**5** p 140-145, 148-151, 160-162 and **6** p 191-194
8	2/27 2/29	Kinetics Kinetics	**5** 160-162
9	3/5- 3/9	**Spring Break**	
10	3/12 3/14	Equilibrium **Exam II**	**5** 160-162 and **7** p 226-231
11	3/19 3/21	Acid-Base Equilibrium Acid-Base Equilibrium	**7** p 225-226, 232-246
12	3/26 **3/27** 3/28	Introduction to Biochemistry ***Last day to drop without academic penalty*** Amino acids and Proteins	**12** p. 414-435
13	4/2 4/4	Amino acids and Proteins Enzymes	**12**, p 429-236
14	4/9 4/11	Nucleic Acids & Protein synthesis **Exam III**	**13** p 450-473
15	4/16 4/18	Nucleic Acids & Protein synthesis Lipids	**11** p 380-382, 385-396, 401-402
16	4/23 4/30 4/25	Carbohydrates (***last day of classes)*** **Final Exam Sec 001**, **3-6 pm** cumulative **Final Exam Sec 002**, **3-6 pm** cumulative	**10** p 332-335, 340-343, 350-353, 359-360 and **14** sec14.4 p 498-501

***Disclaimer**: The instructor reserves the right to adjust the syllabus & schedule as necessary.

Disability Issues: In keeping with University policy, any student with a disability who requests academic accommodations should contact Disability Services at 503-5199 to arrange a confidential appointment with the Disability Services Coordinator. Students are encouraged to seek an appointment as early in the semester as possible, as accommodations are not provided retroactively. Letters of accommodation must be signed and printed on letterhead from the Disability Services office. It is the student's responsibility to provide these letters to professors in a timely manner so that accommodations may be put in place.

Academic Honor Code Issues: The USC Upstate *Code of Academic Integrity* can be found in the *USC Upstate Student Handbook*. Please refer to the *Handbook* if you are unfamiliar with the Code.

Do not copy homework assignments or lab reports from other students and do not let other students borrow your work, as their copying of your work could compromise your academic integrity.

If you have uncertainty at any time about whether a piece of work or particular activity might be a violation of the Student Honor Code, ask! For copying associated with lab reports, students may receive only a warning for the first offence. Depending on the nature of the first offense, credit for that work may be reduced to zero. A second offence will be taken to Dean of Students and then Honor Court.

Lecture Schedule Sec 003* (TTh)

Week	Date	Topic	Chapter/ pages
1	1/10 1/12	Syllabus, Introduction (PKU) Measurement	**1** p 9-22
2	1/17 1/19	Measurement, Science and Chemistry Science and Chemistry	**1** pp 4-8 and **5** p160
3	1/24 1/26	Atomic Structure Compounds	**2** p 24-42, 46-48, 50-51 **3** p 76-88 and **4** p 100-110 and **6** p 190
4	1/31 2/2	Compounds Weak Interactions	**6** p 176-189 and **4** p 111-112
5	2/7 2/9	Weak Interactions, Solutions Solutions, Mole/Stoichiometry	**6** p. 190-191, 194-197, 202-203, 206-207 **3** p 89-91and **5** 153-156
6	2/14 2/16	**Exam I** Chemical Reactions	**5** p 140-145, 148-151, 160-162 and **6** p 191-194
7	2/21 2/23	Chemical Reactions Kinetics	**5** 160-162
8	2/28 3/1	Kinetics Equilibrium	**5** 160-162 and **7** p 226-231
9	3/5- 3/9	**Spring Break**	
10	3/13 3/15	Acid Base Equilibrium **Exam II**	**7** p 225-226, 232-246
11	3/20 3/22	Acid Base Equilibrium Intro to Biochemistry	
12	3/27 ***3/27*** 3/29	Amino Acids & Proteins, ***Last day to drop without academic penalty*** Amino Acids & Proteins	**12** p. 414-435
13	4/3 4/5	Enzymes Nucleic Acids & Protein Synthesis	**12**, p 429-236 **13** p 450-473
14	4/10 4/12	Nucleic Acids & Protein Synthesis **Exam III**	
15	4/17 4/19	Lipids Carbohydrates	**11** p 380-382, 385-396, 401-402 **10** p 332-335, 340-343, 350-353, 359-360 and **14** sec14.4 p 498-501
16	4/24	**Final Exam Sec 003, 3-6 pm** cumulative	

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