Linfield College: CHEM 321 ORGANIC CHEMISTRY FALL 2009

(Tentative)

WEEK	Report Focus	Experiment	MON	TUES	WED	THURS	FRI
1		Lab Check-In (**Must** come to assigned section or Wed, Thurs if on Tues)			9/02 Handouts CH 1 Carbon Cmpds and Chem. Bonds	9/03	9/04 CH 1 Carbon Cmpds and Chem. Bonds
2	Introduction Section	Choose one of 3 options on web page http://www.linfield.edu/chem/, Choose Current Course offerings, then CHEM 321	9/07 No CLASS LABOR DAY	9/08 CH 1/2 Functional Groups and IR Spec	9/09 CH 2 Functional Groups and IR Spec	9/10	9/11 CH 2 Functional Groups and IR Spec
3	***Draft*** Experimental Section	**Isolation** of Caffeine Experiment Week 1	9/14 CH 3 Organic Rxn-Acids & Bases	9/15	9/16 CH 3 Acid s& Bases	9/17	9/18 CH 3 Acid s& Bases
4		Activity on Nomenclature and ring conformations	9/21 CH 4 Alkanes: Intro to Synthesis	9/22	9/23 CH 4 Alkanes: Intro to Synthesis	9/24	9/25 CH 4 Alkanes: Intro to Synthesis
5	Experimental Section	Caffeine Experiment (cont.)	9/28 **EXAM I** (CH 1-4)	9/29	9/30 CH 5 Stereochemistry. Chiral Molecules	10/01	10/02 CH 5 Stereochemistry. Chiral Molecules
6	Experimental Section	**Resolutions** of enantiomers	10/05 CH 5 Stereochemistry. Chiral Molecules	10/06	10/07 CH 5 Stereochemistry. Chiral Molecules	10/08	10/09 CH 6 Ionic Rxns-SN and E Rxns of R-X
7	Results/ Discussion Section	**SN2:** Synthesis of 2-ethoxynaphthalene	10/12 CH 6 Ionic Rxns-SN and E Rxns of R-X	10/13	10/14 CH 6 Ionic Rxns-SN and E Rxns of R-X	10/15	10/16 CH 6 Ionic Rxns-SN and E Rxns of R-X
8	Results/ Discussion Section	**E2: Dehydrohalogenation** of cyclohexyl bromide	10/19 CH 7 Alkenes & Alkynes I Props. & Synthesis	10/20	10/21 CH 7 Alkenes & Alkynes I Props. & Synthesis	10/22	10/23 CH 7 Alkenes & Alkynes I Props. & Synthesis
9	Results/ Discussion Section	**Dehydration** of cyclohexanol **(E1)**	10/26 CH 8 Alkenes& Alkynes II Addition Rxns	10/27	10/28 CH 8 Alkenes& Alkynes II Addition Rxns	10/29	10/30 CH 8 Alkenes & Alkynes II Addition Rxns
10	Results/ Discussion Section	**SN1: Hydrolysis** of t-butyl chloride	11/02 **EXAM II** (CH 5-7)	11/03	11/04 CH 8 Alkenes & Alkynes II Addition Rxns	11/05	11/06 CH 9 NMR and Mass Spectrometry
11	Results/ Discussion Section	**Reduction** of a ketone to an alcohol	11/09 CH 9 NMR and Mass Spectrometry	11/10	11/11 CH 9 NMR and Mass Spectrometry	11/12	11/13 CH 9 NMR and Mass Spectrometry
12		Worksheet on NMR and IR	11/16 CH 10 Radical Reactions	11/17	11/18 CH 10 Radical Reactions	11/19	11/20 CH 10 Radical Reactions
13		**NO LAB THIS WEEK**	**11/23 Thanksgiving**	**11/24 Thanksgiving**	**11/25 Thanksgiving**	**11/26 Thanksgiving**	**11/27 Thanksgiving**
14	Results/ Discussion Section	**Oxidation** of cyclohexene to adipic acid	11/30 CH 11 Alcohols and Ethers	12/01	12/02 CH 11 Alcohols and Ethers	12/03	12/04 CH 11 Alcohols and Ethers
15	MUST SHOW UP TO LAB!	Lab Final Check out	12/07 **EXAM III** (CH 8-11)	12/08	12/09 CH 12 Alcohols and Ethers	12/10	12/11 CH 12 Alcohols and Ethers
16		FINALS	12/14 **Final Review**	12/15 Reading day	12/16 **FINAL EXAM 10:30am**	12/17	12/18

CHEM 321 ORGANIC CHEMISTRY I FALL 2009

Linfield College, McMinnville, Oregon

Instructor: Dr. Elizabeth J. O. Atkinson
Office: 115 Murdock (mornings) /Walker 101
E-Mail: eatkins@linfield.edu

Linfield College (Chem 321, 5 Credits)
Campus Phone: (503) 883 – 2621
Office Hours: M-F 9-10:00 or by appt.

Time and Location:

Lecture:	10:05 to 10:55 am	M,W,F		Murdock 105
Discussion:	10:05 to 10:55 am	T Th	Sec. 01	Murdock 105
	10:05 to 10:55 am	T Th	Sec 02	Graf 209
Laboratory:	2:00-5:00	T	Sec. 01	Murdock 110
	2:00-5:00	W	Sec. 02	Murdock 110
	2:00-5:00	Th	Sec. 01	Murdock 110

Required Text and Material:

T.W.G. Solomons and C.B. Fryhle, Organic Chemistry, 9/e ed., Wiley, 2008
Study Guide to Accompany Text**(strongly suggested)*
Laboratory Notebook, Safety Goggles
(Scientific Calculator, Lab Apron, Model Kit)**(strongly suggested)*

NOTE: *"Students with documented disabilities who may need accommodation, who have any emergency medical information an instructor should know, or who require special arrangements in the event of evacuation, should meet with the instructor as early as possible, no later than the first week of classes."* For further information please refer to Learning Support Services (Walker 124) to ensure that documentation is complete and on file: Cheri White, Assistant Director of Learning Support - McMinnville (x2444; chwhite@linfield.edu)

Academic honesty is expected of all students and each student should *"adhere to the college policy on academic honesty, as published in the Linfield College Course Catalog."*

Linfield's flu alert page on the web: http://www.linfield.edu/flu.html. The CDC has specifically recommended: "Those with flu-like illness should stay away from classes and limit interactions with other people (called "self-isolation"), except to seek medical care, for at least 24 hours after they no longer have a fever, or signs of a fever, without the use of fever-reducing medicines. Some people with influenza will not have fever; therefore, absence of fever does not mean absence of infection. They should stay away from others during this time period even if they are taking antiviral drugs for treatment of the flu." (http://www.flu.gov/plan/school/higheredguidance.html)

Course Description and Purpose:

Organic chemistry is the study of compounds containing a carbon atom skeleton. Fundamentals of organic chemistry, including classification, occurrence, synthesis, analysis, and reaction mechanisms of important classes of organic compounds are studied. Aromatics, organometallics, alcohols, ethers, aldehydes, ketones, carboxylic acids, acid derivatives, and amines are the classes stressed.

The course is designed to provide a fundamental knowledge of organic chemistry - the study of carbon compounds. After reviewing basic concepts from general chemistry, certain classes of compounds are studied in terms of preparation and reaction. Basic concepts involving bonding and structure-property relationships are interwoven in the language and context of organic chemistry.

The study of organic chemistry requires the grasp and understanding of the structure and reactivity of carbon containing molecules which follow unifying principles that make seemingly diverse reactions understandable and predictable. Exploring and learning these principles will allow the student to have a basic understanding of how and why various classes of carbon-containing compounds react, so that he or she will be scientifically literate with respect to environmental or economic issues.

Chemistry is all around us and continually influences our daily lives (*i.e.*, petroleum products, explosives, rubber, fragrances, beauty care products, environmental pollutants, paper, wood products, medication, food additives, plastics, fabrics, detergents, computer components, etc…). The objective of this course is to complete a two semester study of organic chemistry, providing the necessary background and knowledge for those students pursuing careers in medicine, art restoration, pharmacy, agriculture, materials, health sciences, biology and chemistry to name a few.

Grading System:

Lecture Exams (see below)		**500pts**
Lab Grade (normalized score)	**150pts**	
Reaction Sheets/Assignments	**25pts**	
Homework + Quizzes (normalized score)	**125pts**	
Total	**800pts**	

1. **Examinations: There will be 3 chapter exams worth 100 points each and a comprehensive final exam worth 200 points**. Exams test your ability to a) recall facts and concepts and b) apply those concepts to problem solving situations.
2. **Laboratory:** See separate Laboratory Syllabus.
3. **Homework: The text problems will be assigned with each chapter and will be checked off the Friday after completing the chapter, but will not be collected. Each assignment is worth 10pts**. Late assignments will receive a maximum of 5pts. Regular practice in applying new material as it is learned is crucial to success in the course and is the primary way to study for this course. The answers can be found in the Solomons study guide. *Looking through the study guide is not the same as doing the problems yourself.* Also, rewriting your notes is strongly suggested.
4. **Quizzes: Short quizzes worth 10pts may be given in the discussion sections to test the knowledge of reactions and synthetic methods.** They will aid to you in seeing where your weak areas are and what areas to concentrate on while studying.
5. **Reaction Sheets:** On-going collection of all reactions learned in the course to be handed-in at the end of the semester.
6. **Participation: Attendance at lectures and discussion sections is important to help develop a better understanding of the material. Active participation by students in the form of asking questions and making appropriate comments in lecture, discussion and lab sections is expected. Questions regarding homework and tests should be asked prior to the due date for full credit.**

The course work consists of participation in 1) lectures and discussion sections, where facts and governing principles are discussed and where problems are worked out; and 2) in laboratory sessions, where common synthetic and analytical techniques are used to illustrate and expand upon principles taught in lecture.

There is too much material to be covered in the limited lecture time, so **USE YOUR BOOK!! Note** that you are responsible for understanding all the assigned reading even if some has not been discussed in class.

Understanding is your goal. It is easy to discover whether or not you "understand" a concept by trying to explain it verbally to someone else in the course. If your listener grasps the concept easily from your explanation, you have proven that you understand it. If not, then most likely you need to work on clarifying your own grasp of it.

It is also easy to discover whether or not you know a reaction or reaction mechanism by simply drawing the whole thing out (with electron flow arrows) with your books and notes closed. Glancing over a list of reactions or using flash cards isn't enough.

Discussion Sections:

These sections will consist of smaller groups of students, and will be a place for serious interactive learning. Bring your troublesome homework problems, theoretical conundrums, and general questions. Tuesday be prepared to discuss the material for that week's lab experiment. Quizzes will be given on either Tuesdays or Thursdays and may cover both the previous laboratory material and the lecture material. The rest of the time will be spent on working out problems and having fun with molecular models.

Hints for doing well: ("A" students usually study organic chemistry ~2 hours per day)

1. Read the assigned text sections BEFORE class (expect about 10-15 pages per lecture).
2. Review your notes and text book before the next lecture, doing the in-chapter problems.
3. Keep a running "Reaction Sheet" of all reactions and be sure to add to it after each lecture. Rewrite the whole "Reaction Sheet" before each exam.
4. Use my office hours immediately to eliminate confusion or falling behind.
5. For exams: a) review chapters & lecture notes, b) review end-of chapter problems, & c) use old exams for practice

Most importantly: **Don't Fall Behind and Do Lots of Homework Problems.** Try to have fun, enjoy the course and develop an interest in how organic chemistry affects your daily life. **Good Luck!**