

Chemistry 122
Introduction to Organic Chemistry
Spring 09
MWF 10AM

This purpose of this course is to arm students with a thorough understanding of the basic concepts behind organic chemistry and how these concepts are employed in chemical reactions. This course relies on a strong background in general chemistry (CHM 111), and students will be expected to work outside of class to build on these skills as the course progresses. The course is fast-paced, and successful students will apply themselves to daily studying.

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Office Hours: Open door policy-anytime I am in the office without prior commitment. Feel free to just stop by or email and arrange an appointment. Good times to catch me are MWF 9-9:45 and 11-12. In general, Thursday is not a good day to meet with me. Please see me if you are having trouble with the class. Email is a great way to contact me.

Text: "Organic Chemistry", by J. McMurry, 7th ed. Study guides and solutions manuals are available in the bookstore. Molecular models are also recommended but can be shared by groups of students. They will be available for sale in class.

Class attendance: Your attendance at all lectures is expected. You are responsible for all material covered in lectures, assigned readings, and homework sets. If you miss lecture it is your responsibility to obtain all information given out in class. Each lecture, relevant problems from the textbook will be listed. Solutions will not be collected, but you are encouraged to do the exercises to aid comprehension. The answers to these are available in the Student Solutions Manual. **COME TO CLASS AND KEEP UP!** Please note that cell phones are not welcome in class, and since you can't draw structures on a Thinkpad fast enough to take notes, you should leave your computer at home unless instructed. * All students must be co-registered for or have previously passed CHM 122-L.

Grading: Assessment will occur through the following mechanisms, and grades will be assigned according to the scale on the right. Dates are tentative and subject to change.

Exam 1	Friday, Feb. 13	90 pts	A-	90%
Exam 2	Wednesday, March 25	90 pts	B-	80%
Exam 3	Wednesday, April 22	90 pts	C-	70%
Final (cumulative)		170 pts	D-	60%
In-class group work (6 sets @4 pts each)		24		
On-line pre-quizzes (12--3 points each)		36 pts		
TOTAL		500 pts		

Home Page: <http://www.wfu.edu/~kingag/122>. It will be used to give reminders, tips, and answer common questions and also contains old exams, a list of text homework, on-line quizzes that are instantly graded, and links to interactive learning tutorials that I have helped to create. You are responsible for using this resource as instructed in lecture.

Academic Integrity: All students are responsible for knowing and observing the Wake Forest University honor system.

Exams: Make-up exams will not be given. If you have a conflict, you must see me in advance. For excused absences, the average score of the remaining midterm exams will be used for the missed

exam score. Requests for a re-grade must have a short explanation attached to the front and be turned in within 1 week of receiving the grade.

On-line pre-quizzes: It is essential that our class time be used in the most efficient manner. This means that students should prepare for each class and master the basic material independently, allowing more time to discuss difficulties with the instructor. To ensure that all students adequately prepare for class, there will be electronic quizzes accessible from the web page, which must be completed before 12 different classes (all Mondays). Please listen in class for announcements and see the course calendar for a schedule. Failure to complete the quizzes before the deadline *for any reason* will result in a grade of zero.

Group Work: Explaining chemical reasoning to your peers is one of the best ways there is to learn and understand organic chemistry. For that reason, we will occasionally spend part of our class time working problems together in class in small groups. To encourage groups to put forth their best effort, these worksheets will be collected and graded. This will also encourage students to keep up with course material as you cannot explain something that asks you to apply basics. Group work activities will not always be announced and cannot be made up. I will drop your lowest score, but this includes any assignments that received a grade of zero because a student was absent, even if the absence was for illness or University-related travel. Take home message: Be in class each day, having completed the recommended problems from our previous meeting!

Chemistry Clinic: To give our students the opportunity for experienced help in mastering organic chemistry, this semester the WFU *Chemistry Clinic* will be offered for 122 lecture. The *Clinic* is staffed by chemistry graduate students who offer help on a voluntary drop-in basis. The *Clinic* staff will not address any 122L questions but instead will focus on questions from the lecture textbook and instructor handouts. You should use the *Clinic* as your first stop in getting your questions answered----since lecture enrollments are very high this semester, I cannot guarantee that I can meet with all of my students individually to go over questions they have with recommended textbook problems. Instead, students should attend the *Clinic* and then meet with me to go over remaining questions and concerns. The *Clinic* schedule may be altered to accommodate the most students later in the semester. Listen for announcements in class.

Initial Chemistry Clinic Hours for Spring 2009 (exclusive to 122 lecture sections):

TTh 8:30-9:30 AM	Salem 207
TTh 11AM-12PM	Salem 207
MW 6-7PM	Salem 8
Friday 10AM	Salem 207
Friday 2PM	Salem 207

FINAL EXAM (cumulative)

Saturday 5/2 2-5 PM We will take the American Chemical Society National Standardized final exam with a supplement written by your instructor.

After completing CHM 111 students should be:

- *Able to describe atomic theory and structure and relate electronic structure to the periodic table.
 - *Able to determine electronic structure and relate it to chemical and physical properties.
 - ***Able to draw Lewis structures and resonance forms (without hesitation).
 - ***Able to predict molecular geometries using VSEPR and describe bonding in terms of hybrid orbitals.
 - *Able to draw simple MO diagrams and use them to predict relative stabilities and physical properties.
 - *Able to rank compounds by physical properties (bp, fp, viscosity...) by looking at structures and determining IMF's.
- Able to calculate stoichiometric relationships: mole ratios, limiting reagents, percent composition...
- Able to solve thermochemical problems involving the concepts of enthalpy, calorimetry.
- *Indicates importance in CHM 122 lecture.

Tentative Calendar for A. King's CHM 122

Monday	Wednesday	Friday
January You should review McMurry sect. 1.1-1.11 2.1-2.6 (covered in chm111)	14 introduction 1.12 Drawing 3.1 Functional groups	16 3.2-3.4 Isomers
19 MLK Holiday (no classes) AGK out of office	21 3.4-3.6 Begin Nomenclature Ethane Conformations	23 3.7 Ethane and Butane conformation
21 OLQ1 4.1-4.3 Cyclic conformations 4.4-4.6 Cyclohexane conformations	28 <i>Last day to add</i> 4.6-4.9 subst. cyclohexane	30 9.1-9.4 Enantiomers
2 February OLQ2 9.5-9.8 Diastereomers/Meso	4 9.8-9.9 Optical purity and diastereomers	6 12.1-12.3 Intro to Mass Spec 12.6 Begin IR
9 OLQ3 12.6-12.8 IR	11 13.1-13.7- ¹³ C NMR	13 Exam 1
16 OLQ4 Finish ¹³ C NMR 13.8-13.12 ¹ H NMR: splitting and integration	18 <i>Last day to drop</i> Finish proton NMR	20 Spectroscopy review problems 5.1-5.6 Start organic reactions
23 OLQ5 5.1-5.6 Organic reactions Intro to Equilibrium 2.7-2.10 Organic acid base rx	25 5.7-5.10 E diagrams 10.9 Organic redox	27 6.1-6.5 Alkene Nomenclature
2 March OLQ6 6.6-6.11 Alkene basics	4 7.1-7.5 Alkene rx-up to hydration	6 7.6-7.11 Alkene rx-through hydroboration
9 Spring Break	11 Spring Break	13 Spring Break
16 OLQ7 8.1-8.4 Alkynes	18 8.5-8.8 Alkyne rx	20 8.9 Alkyne Rx & Intro to synthesis
23 OLQ8 9.10-9.11 Stereochemistry of rx	25 Exam 2	27 10.1-10.5 Alkyl halides
30 OLQ9 10.6-alkyl halide prep and rx	1 April 11.1-11.3 S _N 2	3 11.4-11.5 S _N 1
6 OLQ10 11.7-11.9, 12 Elimination and review	8 14.1-14.3 Dienes 1,2 vs 1,4 addition	10 Good Friday (no classes)

13 14.4-14.6 Diels Alder Reactions OLQ11	15 14.7-14.8 15.1-15.6 Aromaticity	17 15.7-15.8
20 16 OLQ12	22 Exam 3	24 16
27 16 Birch reduction No OLQ!	29 Buffer Course Review / Eval	Final exam Saturday 5/2 2-5 PM