Organic Chemistry-II

Carol Libby 213 Collier Hall of Science 610-861-1629 (ext. 1629) cblibby@cs.moravian.edu	**Class Hours** MWF 10:20-11:10 Tues. 9:10-10:00 PPHAC 117	**Office Hours** Mon. 11:30AM -> 12:45 PM Tues. 10:15AM -> 11:30 AM Wed. 11:30AM -> 12:30 PM Fri. 11:25AM -> 12:30 PM And by appointment

Required Materials

- *Organic Chemistry: A Guided Inquiry*, Andrei Straumanis, 2004, Houghton Mifflin, 4th printing [workbook]
- *Organic Chemistry*, 8th edition, Solomons & Fryhle, 2004, Wiley [S&F]
- *Operational Organic Chemistry: A Problem-Solving Approach to the Laboratory Course*, 3rd edition, Lehman, 1999, Pearson/Prentice Hall [Lehman, long]

  or

  Student Companion: Laboratory Techniques for Organic Chemistry, Lehman, 2003, Pearson/Prentice Hall [Lehman, short]
- *Chemistry 211 Organic Laboratory Techniques Laboratory Manual*, Fall 2006
- Molecular model kit for building organic molecules such as the Orbit Foundation Molecular Model Set sold in the bookstore
- 3-ring binder to serve as "Concepts Notebook" [continuation of last semester's is fine]
- 1.5 inch, 3-ring binder with hard cover and inside pocket fitted with at least 6 tab dividers to serve as laboratory "data binder" [continuation of last semester's is fine]
- Lab notebook, which must be hard cover, permanent (not spiral) bound and fit in the inside pocket of data binder [continue in Chem 211 lab notebook]
- Goggles will be available in the lab, but if you wish to purchase your own, they must be similar to those provided—i. e. fit tightly against the face all around to provide protection from splashes and fumes

Goals of the Course

The goals of Chemistry 212 are for students to:

- Learn details of reactions of organic compounds, specifically: elimination, addition to alkenes and carbonyls, addition-elimination at carbonyls, aromatic substitution, those resulting from acidity of α-H's of carbonyls, reactions of carboxylic acids and their derivations, and free radical.
- Apply concepts of acidity, bond polarity, electron distribution and stability, inductive effects, and resonance learned in Chemistry 211 to predict reactions of organic compounds and their mechanisms.
- Use knowledge of organic reactions and retrosynthetic strategies to devise viable synthesis of target molecules.
- View data, analyze trends, draw conclusions from data and apply these conclusions in different contexts.
- Prepare organic compounds in multistep syntheses, with an awareness of factors that influence overall success.
- Apply lab techniques learned in Chemistry 211 to isolate and purify organic compounds from reaction mixtures.
- Gain additional expertise in using instruments to identify and characterize organic compounds, specifically gas chromatography, infrared spectroscopy, mass spectrometry, and ^{1}H and ^{13}C NMR.
- Acquire accurate and timely record-keeping practices in the lab.
- Learn best practices for safeguarding the health and well being of self, lab mates and the environment by properly handling lab materials.
- Develop effective personal strategies for working productively in teams to accomplish a common goal.
- Be able to organize and present lab data, both verbally and in writing, to support conclusions of experimental findings.
- Become proficient in the use of SciFinder Scholar and other on-line databases to find specified information in the primary scientific literature.

Format and Philosophy

The approach we will use to learn organic chemistry is called "process oriented guided inquiry learning (POGIL)." It is based on the constructivist theory of learning developed by cognitive psychologists and on research indicating that a) teaching by telling does not work for most students, b) students who are part of an interactive community are more likely to be successful, and c) knowledge is personal; students enjoy themselves more and develop greater ownership over the material when they are given an opportunity to construct their own understanding. Read pages ix-x of the Workbook for more insight into a guided inquiry class. If you feel that this pedagogy does not meet your needs, you are responsible for individually meeting with the professor to develop strategies to optimize your learning in a student-centered guided inquiry setting.

Lab

You will be provided with materials for the lab, specifically handouts that you file together in your data binder to make up the "Chem 212L Organic Laboratory Techniques" manual. Lab policies, safety regulations, lab notebook, data binder and report formats put forth in the Chemistry 211 Lab Manual remain in effect for Chemistry 212. The Tuesday 9:10-10:00 AM class will serve as the "lab lecture" for the week's lab work.

Evaluation

Hour Exams	300 points
Quizzes	100 points
Homework	100 points
Final Exam	175 points
Lab	250 points
Group work & participation	75 points
Total =	1000 points

Your final grade in the course will be based on the number of points you earn, >900 points=A-, >800 points=B-, >700 points=C-, >600 points=D- , < 600 points=F. The points required for a letter grade *may* be adjusted downward. Final grades will include +'s and –'s. The approximate points earned - letter grade correlation will be announced after each hour exam.

Hour exams will be given during class period on these Mondays: February 12, March 19, and April 23. Mark your calendars now. I do not intend to change the exam dates. Each exam will specifically test class material covered since the previous exam. However, since the nature of chemistry is cumulative I will assume that you have mastered past Chem 211-212 material. Concepts covered in labs will also be tested. A practice exam, with representative problems to be expected on the real exam, will be handed out approximately a week ahead of time. No make-up exams will be administered. If an exam is missed without a valid excuse, verified in writing by the Health Center or Learning Services, the exam grade will be zero. The grade for an excused exam will be determined by the grades earned on the remaining exams (including the final); i. e. more value will be added to subsequent exams.

There will be about 11 quizzes, each worth 10 points, given at the beginning of classes marked in the "Important Dates Calendar." The lowest quiz grade will be dropped. Quizzes will be on material covered in the ChemActivities worked since the previous quiz or exam. They will be about 10 minutes long. There are no make-up quizzes. Your first quiz missed, for whatever reason, will count as your "dropped" quiz. Without a written excuse from the Health Center or Learning Services, any quiz missed thereafter will be a zero. The grade for an excused quiz will be determined by the grades earned on the remaining quizzes (or the final exam if the last quiz is missed); i.e. more value will be added to subsequent quizzes.

Homework assignments will be due on days when there are no quizzes, except on the days after exams, as indicated on the Important dates Calendar. Typically these will be a Workbook exercise or S&F problem. The specific assignment will be posted on Blackboard after each class, by 9:00 PM if possible. These must be turned in on the "Homework" sheets provided in the group folder. You are allowed to work with others on the homework assignments, and are particularly encouraged to do so with your current group members; however, you must complete

the written homework assignment privately, in your own words, reflecting your understanding of the problem. Homework problems are due at the beginning of class on the class day after they are assigned. No late homeworks will be accepted. Homework grades will be given a grade based on these standards: A, for complete, correct responses; B for responses that are partially correct or not complete; C for homework where effort has been made, but incorrect responses result; 0 (zero) for homework reflective of no significant effort to answer or understand, late homework, or homework not handed in .

The final exam will be held during finals week (April 30-May 4) at the time and place scheduled by the registrar. The exam will be comprehensive, but material covered since the last hour exam will be more heavily emphasized.

The basis for lab evaluation is given in the "Chem 212L Organic Laboratory Techniques" manual.

The 75 points for group work & participation will be based on: your group's responses to questions and presentations in class, your group's daily Recorder's and Strategy Analyst's reports, your individual contributions to class discussions, your "Concepts" notebook, and your individual contribution to the overall positive learning environment of your group and the course as a whole. Group work and participation points will be distributed 4 times during the semester, after each exam.

Attendance

- Attendance at M, T, W, and F *class meetings* is *expected*. If you are absent from class, you will not receive any group work points earned by your group that day. Tuesday absence will negatively affect your lab grade.
- Attendance at *lab* is *mandatory*. If an emergency or illness occurs and you must miss lab, inform me *as soon as possible* (email or phone/voice mail), preferably before lab. If you are excused from a lab, *you* are responsible for arranging a make-up with me at the time the excuse is granted. Make-up labs are during regularly scheduled lab times (W, Th, F).
- By January 19, student athletes must provide a written list of the dates when they expect scheduled competitions to interfere with class attendance or their regularly scheduled lab sessions, and also updates as soon as any cancelled games are rescheduled. Make-up labs must be scheduled *before* game absences.
- Attendance at *exams* is *required*. If you must miss an exam because of illness or emergency, inform me ahead of time (preferably by email or phone/voice mail). Failure to do so may result in a grade of zero for the missed exam.
- Travel schedules for weekends or breaks are not valid excuses for class, lab, exam, or quiz absence.

Course Outline

See attached "Class, ChemActivity, and S&F Schedule" posted on course Blackboard site.

Academic Honesty Policy

Progress in science requires ethical integrity among its practitioners and you are expected to meet that standard in this course. Evidence of plagiarism and cheating will be dealt with in accordance with the college policy on academic honesty found in the Student Handbook (http://www.moravian.edu/studentLife/handbook/academic2.htm). You are expected to be familiar with and follow the rules spelled out in the Student Handbook. In the event of a suspected infraction – in fairness to your peers and the standards of the college – it is my job to send the materials in question to the Academic Dean's Office at which time you are given the chance to provide your perspective on the matter.

Cheating occurs when you receive unauthorized verbal or written help from others, including from other students who have completed the course; however, Chemistry 212 does require you to work productively with peers, both in the classroom, where daily group reports are required, and in the laboratory, where collaborative work is necessary. You are also strongly encouraged

to work with classmates outside of class—keeping up on a daily basis and doing homework, as well as studying for quizzes and exams. You are also allowed to discuss lab reports and pre-lab assignments with class peers. But in any case where you submit work as an individual, it must reflect your data and your understanding of how to solve the problem or answer the question. Any work you turn in (including quizzes, homework, exams, prelab assignments and lab reports) must be written in your own words; merely copying from others is not acceptable. In cases where submission of group data is required, you must reference classmates' lab records. If you are uncertain about whether something is considered cheating or not, ask me for clarification.

During quizzes and exams, spread out in the classroom as much as the desk set-up allows. When students are too close, unintentional glances are hard to avoid. Time that I have to spend policing this policy will be taken from the time allotted for the quiz or exam and may impact your group work & participation grade.

If you believe that there are situations in the course that foster academic dishonesty, please bring them to my attention. Likewise, if you have observed cheating, bring the details to my attention as soon as practical. Insofar as it is possible, your anonymity will be protected.

Communications

- The Chem 212 Blackboard site is where homework assignments, quiz coverage and other important class announcements will be posted. You must check it daily for changes and updates to assignments. The course syllabus and other documents will also be posted there. You are required to log in to the Blackboard site after the first class.
- From time to time I will want to communicate with you individually by email, so following the first class period, you must send me an email with the email address you want me to use, the one you will check regularly; this should be the same one you use on the class Blackboard site. If this address changes during the semester, it is your responsibility to inform me.
- All email communications must follow this format for the header "Subject" line: Chem 211-your last name-few words indicating reason for email, for example, **Chem 212-Smith-1/26 lab**. If your name is not on the subject line, I will return the message unread. Also don't forget to sign each email with your name. Knowing that the message comes from stfwm02 is not helpful.
- I look forward to working with you during office hours. Bring your "Concepts Notebook" with you if you are looking for general or specific help, as it will give me a view of your study strategies. Sometimes I work in our lab during office hours. Please look for me there if I'm not at my desk.
- I work hard to evaluate each student fairly. If you have a question or concern about a grading issue, see me during office hours or make an appointment to talk to me about it. Immediately before or after class are not good times for these discussions.

Classroom and Outside-of-classroom Patterns

- The majority of class time will be spent working in self-managed groups of three or four students. I will assign group membership and reshuffle groups on a regular basis. Group member roles and responsibilities are described in the "Group Work" handout.
- Class will begin promptly at 10:20 each day, with each group member in his or her correct seat, according to their role for the day. Generally I will begin each class with a brief summary of the previous day's work, addressing any difficulties found in the class' recorder reports or homework, and set goals for the day's work. On quiz days, be ready to start the quiz at 10:20AM. If you are late, you will not get extra time for the quiz.
- The quiz or beginning summary is followed by group work on a ChemActivity (CA). During this time I will walk around class, observe, ask and answer questions. You must bring your workbook to class every day. If you don't have it and are not writing in it during class, your group work & participation grade will suffer. During class periods, group work may be interrupted for group reports, brief whole-class discussions, or mini-lectures. You must pause group work for these discussions.

- I will not entertain questions during group work time about course matters unrelated to the CA (Can I switch my lab section? When is the lab report due? Don't you just love the snow?) Before or after class, email, or office hours are the ways to take care of these matters.
- About 11:05AM, I will stop group work to give you time to prepare your group's Recorder's and Strategy Analyst's reports as well as your personal "Concepts" summaries.
- ChemActivities have been developed so that all the Critical Thinking Questions and some of the Exercises can be completed during one 50-minute class period, with the expectation that the Exercises will be completed outside of class time before the next class meeting. Specific requirements of work to be completed before the next class, homework problems, and quiz coverage will be posted on Blackboard by 9:00PM after class. Surveys have found that successful O-Chem students who have used Organic Chemistry: A Guided Inquiry (our Workbook) report spending 3 hours outside of class studying for each class period; coincidentally this is the time that I have expected when teaching classes by the lecture method.
- Recorder's reports will be copies of the ChemActivity (CA) filled out to reflect the group's answers and progress on the CA. These will be evaluated and available in your group folder on the shelves outside my office as soon as possible after class, hopefully by 6:00PM. In fairness to all group members, Recorder's Reports and the group folders are not to be taken from the Chemistry floor of the Collier Hall of Science.
- You are strongly encouraged to work outside of class in groups. Studies show that most successful students do much of their homework in a productive group environment and that most students who fail are working alone.
- You should spend outside of class time maintaining your "Concepts Notebook," which will be spot-checked or randomly collected several times during the semester. The minimal requirement for this document is a completed "Today's Main Concepts" sheet for each class period. It is highly suggested that you use this binder to store and organize all classroom-related materials. A suggested organization might be to group each day's work as follows: "Today's Main Concepts" sheet, homework assignments, any notes taken during class, worked out ChemActivity exercises, worked out problems from Solomons & Fryhle, also quizzes and exam materials. These might be ordered in chronological or reverse chronological order.

Additional Information

- Turn off cell phones during class.
- This syllabus outlines the policies for the course. You are responsible for understanding them. Any changes in course policy will be announced in class or on the class Blackboard site.
- Any student who wishes to disclose a disability and request accommodations under the Americans with Disabilities Act, (ADA) for this course MUST first meet with either Mrs. Laurie Roth in the Office of Learning Services (for learning disabilities and/or ADD/ADHD) or Dr. Ronald Kline in the counseling Center (for other disabilities).