

| week | | Chp | Lecture (Wade text) | Expt # | Lab (Lehman) |
|------|---------------|----------|---|-----------|---|
| 1 | 27-Jan | M | 11 Review: organic reactions/ Redox Reagents | | |
| | | | | T | Lab Check-in / NMR Review / Mass Spectroscopy |
| | | W | 14 Synthesis of Epoxides / Ring-Opening of Epoxides | | |
| | | | | Th | Stereochem Review / TORP for Lab Notebook |
| 2 | 03-Feb | M | 15 1,2 and 1,4-Addn of Conj Systems/Allylic Bromination (NBS) | | |
| | | | | T | 23 Bromination of trans-Cinnamic Acid |
| | | W | 15 Cycloaddition Reactions- Diels Alder Rxn | | |
| | | | | Th | 23 continued |
| 3 | 10-Feb | M | 15 Diels Alder Rxn Stereochemistry bookkeeping and Summary | | |
| | | | | T | ML 27 Diels Alder Reaction |
| | | W | 16 Aromatic Compounds | | |
| | | | | Th | ML 27 continued |
| 4 | 17-Feb | M | Washingtons Birthday- No Classes | | |
| | | | | T | 32 Identification of Diene in Eucalyptus Oil |
| | | W | 16 Heterocyclic Aromatic Compounds | | |
| | | | | Th | 32 continued |
| 5 | 24-Feb | M | Exam 1 [Chp 11, 14, 15, 16] | | |
| | | | | T | 35 Directive Effects in Bromination of Vanillin |
| | | W | 17 Electrophilic Aromatic Substitution | | |
| | | | | Th | 35 continued |
| 6 | 03-Mar | M | 17 Activating and Deactivating Groups | | |
| | | | | T | 38 Determination of the Structure of a Natural Product |
| | | W | 17 Retrosynthetic analysis for polysubstituted aromatics | | |
| | | | | Th | 38 continued |
| 7 | 10-Mar | M | 18 Synthesis of Aldehydes and Ketones | | |
| | | | | T | 42 Wittig Synthesis of 1,4-Diphenyl-1,3-butadiene PART A |
| | | W | 18 Acetals and Hemiacetals | | |
| | | | | Th | 42 continued |
| 8 | 17-Mar | M | 18 Addition of Alkylolithium Reagents and HCN | | |
| | | | | T | 42 Wittig Synthesis PART B |
| | | W | 18 Aldehydes and Ketones synthetic strategies | | |
| | | | | Th | 42 continued |

| week | | Chp | Lecture (Wade text) | Expt | Lab (Lehman) |
|------|------------------|----------|---|-----------|--|
| 9 | 24-Mar | M | 19 Amines | | |
| | | | | T | 56 Multistep Synthesis of Benzilic Acid [Part A] |
| | | W | 19 Amines and quick review for Exam 2 | T | Continue with Chp 19 on Amines |
| | | | | Th | Exam 2 [Chp 17, 18, 19] |
| 10 | 31-Mar | M | 20 Structure and Acidity of Carboxylic Acids | | |
| | | | | T | 56 Multistep Synthesis of Benzilic Acid [Part B] |
| | | W | 20 Conversion to acid derivatives | | |
| | | | | Th | 56 Multistep Synthesis of Benzilic Acid [Part C] |
| 11 | 07-Apr | M | 21 Hydrolysis of acid derivatives | | |
| | | | | T | TBA |
| | | W | 21 Reactivity of Acid Derivatives | | |
| | | | | Th | catch up and problem-solving |
| | Apr 14-18 | | Spring Recess- No Classes | | |
| 12 | 21-Apr | M | 22 Structure and Formation of Enols, Enolates, Enamines | | |
| | | | | T | 48 Preparation of Para Red and Related Azo Dyes |
| | | W | 22 Claisen, Acetoacetic Ester and Malonic Ester Syntheses | | |
| | | | | Th | 48 continued |
| 13 | 28-Apr | M | 22 Conjugate Addn- Michael Reaction and Robinson Annulation | | |
| | | | | T | 48 continued |
| | | W | 22 Catch up / Review for Exam 3 | | |
| | | | | Th | Exam 3 [Chp 20, 21, 22] |
| 14 | 05-May | M | 23 Monosaccharides | | |
| | | | | T | handout Multistep Synthesis of cyclohexyl dicarboxylate [Part A] |
| | | W | 23 Dissacharides and glycosides | | |
| | | | | Th | handout Multistep Synthesis of cyclohexyl dicarboxylate [Part B] |
| 15 | 12-May | M | 23 Polysaccharides | | |
| | | | | T | handout Multistep Synthesis of cyclohexyl dicarboxylate [Part C] |
| | | W | 23 Polysaccharides | | |
| | | | | Th | handout Multistep Synthesis [finish] |
| 16 | 19-May | M | 24 Amino Acids, Peptides and Proteins | | |
| | | | | T | Project Presentations |
| | | W | Exam 4 [Chp 23, 24] | | |
| | | | | Th | Lab Check-out / Project Presentations |
| 17 | May 27 | | FINAL EXAM Tuesday May 27 9:25-11:25 Room 30-222 | | |

Chem 232 Syllabus Spring Semester, 2014

Course: Chemistry 232 5 Units; 3 hrs lecture, 6 hrs laboratory
Prerequisites: Chem 231 or equivalent course (grade of "C" or better)
Lecture: M, W 9:30-10:45 room 30-222
Lab: T 9:30-1:20 & Th 9:30-11:20 room 30-222
Textbooks: *Organic Chemistry* L.G. Wade Jr. (6th edition or more recent)
Multiscale Operational Organic Chemistry; John W. Lehman (2nd ed. or more recent)

Required materials: safety goggles; scientific calculator; laboratory notebook, vinyl gloves for lab

Recommended materials: molecular model kit

Instructor: Thomas Olmstead, Ph.D.

Phone: ext. 7483

e-mail: tom.olmstead@gcccd.edu

webPage: www.grossmont.edu/tomolmstead *check webpage for handouts and studyguides!*

Office hours: Office 30-228 M, T, W, Th 9:00-9:30 am
M, W 1:00-2:00 pm
W 1:30-2:30 pm

Course description

This is the second semester of a two-semester sequence in organic chemistry designed to meet the needs of the chemistry major and other scientific majors. This course is a combination of three hours per week lecture and six hours per week laboratory. Emphasis will be on the reactivity of conjugated systems, aromatic systems, carbonyl functional groups, carbohydrates and some representative biomolecules as well as retrosynthetic analysis. Application of spectroscopic methods will be ongoing throughout the semester. **Capstone experience** will include multistep syntheses in the lab and a retrosynthetic "paper" synthesis of a complex multifunctional organic molecule to be presented as a proposal to the class.

Grading Policy

The following grading scale will be used:

| | | | |
|--------------|----------------|------------|------------|
| A+ (98-100%) | B+ (88%) | C (68-77%) | D (55-67%) |
| A (91-97%) | B (81-87%) | | |
| A- (89-90%) | B - (78 – 80%) | | |

Your final grade for the course is based on a combination of lecture and lab performance. Seventy-five percent (75%) of your grade comes from the lecture and twenty-five percent (25%) comes from the laboratory portion of the course. The *approximate* break-down of percentage points is as follows:

| | |
|-----------------------------------|-----|
| Unit exams (4 exams) | 40% |
| Problem Sets & Quizzes (variable) | 20% |
| Final exam | 15% |
| Lab expt. | 25% |

Students must pass the lab portion of the course independently of the lecture portion; i.e., you cannot pass the course if you fail lab regardless of your lecture scores. Students must receive a minimum of 55% in lab to pass the lab portion of the course.

For accommodations due to a disability, please see your instructor within the first week of the semester. Students may contact DSP&S in person or by phone

Academic Integrity Policy

Cheating and plagiarism (using as one's own ideas writings, materials, or images of someone else without acknowledgement or permission) can result in any one of a variety of sanctions. Such penalties may range from an adjusted grade on the particular exam, paper, project, or assignment (all of which may lead to a failing grade in the course) to, under certain conditions, suspension or expulsion from a class, program or the college. For further clarification and information on these issues, please consult with your instructor or contact the office of the Associate Dean of Student Affairs. **This instructor automatically assigns a grade of zero for any assignment, test, quiz or lab report in which the student is found to violate the academic integrity policy.**

Drop Procedure

During the first two weeks of the semester, the instructor will drop students who miss two or more classes. This will allow other students on the wait list to enroll. Students will not be reinstated under these circumstances unless there are still seats available after the wait list has been added.

After the first two weeks of the semester, students must assume responsibility if they wish to drop the course.

General Policies

- Frequent evaluation will be in the form of quizzes and problem-solving assignments. Quizzes will be written during lecture or lab. Some of the assignments will be given as homework; others may be given during the lecture. There will be **no make-up** for any quiz or assignment given during lecture or lab classes.
- There will be **no make-up lab experiments** since there is only one section of Chem 232.
- **Due dates** for all assignments and lab reports will be announced during lecture and lab times. **No credit** will be given for any work turned in past the due date. Students must assume responsibility regarding due dates; if a student is not sure of deadlines, verify dates with the instructor.
- **Students are encouraged to attend all lectures and labs.** The responsibility for obtaining lecture notes, assignments and due dates rest entirely with the student, regardless of attendance habits. Extending holidays and breaks does not constitute a valid excuse for missing any work. Consult the semester calendar during the first week of class, before you purchase plane tickets, and scheduled your travel plans accordingly.
- Students may receive five bonus points by meeting with instructor during the first week of the semester to verify that they have read this entire syllabus.
- **Students must always show their work** for all problems involving calculations in order to receive credit.
- Please be aware of the **academic integrity policy**. In particular, all work (exams, quizzes and assignments) are to be entirely your own. Also, information may not be programmed into a calculator for use on any exams or quizzes. Plagiarism is strictly forbidden.
- Students are **not allowed to leave the classroom** after a quiz or exam has begun.
- **Students are strongly advised to dress appropriately for lab sessions-** no open-toed shoes, backless shirts or tank tops or mini shorts. Comfortable cotton clothes are best. Many synthetic materials may dissolve in the presence of organic vapors or chemical spills. Understand that you need to protect your skin during lab experiments! **Eye protection** is never a negotiable issue-protect your eyes at all times in the lab. **Protective gloves are required** when handling hazardous materials; buy a box of vinyl gloves and keep them in your lab drawer.

Classroom policies

A certain amount of formality is needed during class to ensure that we maintain an effective learning environment. To that end, the following set of rules will be in force at all times:

- Each person is to be treated with the respect that every human deserves. The obvious infractions include racial slurs or negative comments based on religious or ethnic background. We are all individuals and need to be recognized as such.
- Creating distractions during lecture will not be tolerated. Talking in class should be directed to the group, not between individuals unless we are involved in small-group activities.
- Entering the classroom after the lecture has started is considered to be rude and disruptive. Please get to class on time. Do not leave early unless the instructor has been notified previously.
- Taking a break in the middle of lecture is rude and disruptive. Make your restroom visit before entering class.
- Eating and drinking during class (but never during lab time) is allowed provided your feeding habits are not disruptive or messy.
- Cell phones and pagers must be turned off during class and lab. If you have a situation that requires you to be “on call” for any reason, please notify the instructor in advance. Ringing phones and pagers during class is very disruptive and will not be allowed.
- Do not leave trash on the floor or the desks. Keep our classroom and lab neat and tidy.

Instructor Philosophy

I will work hard for you. I spend considerable time preparing lectures and simplifying concepts through the use of worksheets, handouts and studyguides. I start class on time and expect students to be in their seats ready to begin class. My habits include grading and returning exams within 24-36 hours and quizzes are often graded by the end of the day. Problem sets are usually graded within a few days. Lab reports generally take up to one week or more to grade.

For the most part, you will receive plenty of timely feed-back on your performance. If you are absent the day when exams or quizzes are handed back, your paper goes into a drawer and I do not make any effort to track you down. If you know that you have a paper that has been graded, come to my office and retrieve your work. Students are responsible for monitoring their grades throughout the semester.

Remember this slogan- **there is no sprinting in organic chemistry!** Students must realize that this is a fast-paced course and missing a single lecture may cause you to fall behind. In the event that you must miss a lecture, be sure to take advantage of office hours and discuss your situation with the instructor.

I will do my best to accommodate any student **even outside of regular office hours**. I am available daily via email and make student emails my priority. My goal is to remove any excuse for a student who may feel that the instructor is not helpful. Please do not abuse my good nature but definitely take advantage of my willingness to help you master the material in this course. Welcome to the class!

Student Learning Outcomes:

1. Demonstrate a working knowledge of the language of organic chemistry.
2. Recognize the major functional groups of organic compounds.
3. Predict the major products of chemical reactions of representative organic functional groups.
4. Apply a theoretical approach to explain the chemical and physical behavior of organic compounds.
5. Employ laboratory equipment and techniques to collect, analyze and evaluate experimental data.