

**Organic Chemistry**  
**Chem 152—Section 10**  
**Spring 2009**

**Instructor:** Cynthia S. Dowd (Samson 303; 202-994-8405; cdowd@gwu.edu)  
**Time:** Mon/Wed, 12:45-2:00pm  
**Location:** Corcoran Hall 302  
**Office Hours:** Mon/Wed, 2:00-3:00pm in Sam 303 and by appointment

**Required Text:** Organic Chemistry, L.G. Wade, Jr., 6<sup>th</sup> Edition, Prentice Hall  
**Other Materials:** Solutions Manual for Wade's Organic Chemistry, J.W. Simek  
Molecular Model Set  
Problem assignments and any additional information will be posted on Blackboard.

**Course Goals:**

The overall objective of the course is to build knowledge of synthetic organic chemistry through the exploration of specific functional groups. Several basic functional groups and their reactions were introduced in Chem 151. Chem 152 will use these concepts as well as introduce more advanced synthetic concepts and techniques. Reactions will be combined in a step-wise process, enabling the student to create complex and interesting organic molecules. We will use spectroscopic methods for the determination of organic structures, and combine that information with chemical observations to deduce the structures of increasingly complex substances. The semester will conclude with an examination of the chemistry of important biomolecules.

**Material to be covered:**

|            |   |
|------------|---|
| Chapter 14 | Ethers, Epoxides, and Sulfides                              |
| Chapter 15 | Conjugated Systems  |
| Chapter 16 | Aromatic Compounds  |
| Chapter 17 | Reactions of Aromatic Compounds                             |
| Chapter 12 | Infrared Spectroscopy and Mass Spectrometry                 |
| Chapter 13 | Nuclear Magnetic Resonance Spectroscopy                     |
| Chapter 18 | Ketones and Aldehydes                                       |
| Chapter 22 | Condensations and Alpha Substitutions of Carbonyl Compounds |
| Chapter 19 | Amines  |
| Chapter 20 | Carboxylic Acids  |
| Chapter 21 | Carboxylic Acid Derivatives                                 |
| Chapter 23 | Carbohydrates and Nucleic Acids (selected sections)         |
| Chapter 24 | Amino Acids, Peptides, and Proteins (selected sections)     |

**Learning Objectives:**

By the end of the semester, the student should know how to:

1. Provide and decipher correct chemical names for simple organic molecules;
2. Draw the chemical structure of simple to moderately complex organic molecules from its name;
3. Provide routes of synthesis for each functional group;
4. Describe products of reactions using each functional group;
5. Draw a reaction mechanism to show understanding of the way in which a reaction takes place;
6. Combine synthetic reactions to show multistep syntheses; and
7. Use IR, MS, and NMR spectroscopy to determine structures of organic molecules.

## **Exams and grading:**

There will be three in-class exams (100 points each). These will be given approximately February 9, March 9 and April 15. These dates are subject to change. A cumulative final exam will be worth 200 points. Final grades will be computed out of 500 points. As with all courses, this course is guided by the principles of the Code of Academic Integrity (<http://www.gwu.edu/~ntegrity>).

Problems will be suggested for each chapter. These problems will not be graded but should serve as a means for the student to practice skills learned in class. A subset of these problems will be performed in class. The key to success in organic chemistry is to work with the material every day and to continue practicing the subject by doing the problems. Do as many problems as you can and rework the problems you missed.

Final grades at the end of the semester may or may not be curved. That decision is left up to the instructor and will only be made at the end of the term when final grades are tallied. The purpose of the curve is the keep the average of the current class in line with averages from previous years and sections.

## **Exam policies**

### Absences:

No student will be excused from taking an exam at the scheduled time **without prior permission** from the instructor. If you believe that you have a valid reason for requesting an excused absence, contact Dr. Dowd **before** the exam (by 12:25pm the day of the exam) either in person, by phone or by e-mail. A grade of zero will be given for an unexcused absence.

Valid excuses include: a death in your family, your own illness requiring hospitalization and/or extended absence from school, and GW sports-related travel. Each excuse requires acceptable proof. Absence due to your own illness requires a doctor's note stating the dates of your illness and the date that you will be able to return to school. It is your responsibility to contact the instructor to re-schedule the test promptly. In the case of your own illness, you should re-schedule the test **to be taken** within 24-48 hours after your return to school. You will not be able to re-schedule the test after the exam has already been passed back to the class (usually within one week after exam day).

### Disputes:

If you would like to dispute your grade, put your comment in writing in Dr. Dowd's mailbox within 10 business days following receipt of your graded exam. Faculty mailboxes for the Chemistry Department are located in Corcoran Hall 107.

## Syllabus Information for Chem 152—section 10

### Emergency Preparedness and Response at The George Washington University

#### To Report an Emergency or Suspicious Activity

Call the University Police Department at 202-994-6111 (Foggy Bottom).

#### Shelter in Place – General Guidance

Although it is unlikely that we will ever need to shelter in place, it is helpful to know what to do just in case. No matter where you are, the basic steps of shelter in place will generally remain the same.

- If you are inside, stay where you are unless the building you are in is affected. If it is affected, you should evacuate. If you are outdoors, proceed into the closest building or follow instructions from emergency personnel on the scene.
- Locate an interior room to shelter inside. If possible, it should be above ground level and have the fewest number of windows. If sheltering in a room with windows, move away from the windows. If there is a large group of people inside a particular building, several rooms maybe necessary.
- Shut and lock all windows (for a tighter seal) and close exterior doors.
- Turn off air conditioners, heaters, and fans. Close vents to ventilation systems as you are able. (University staff will turn off ventilation systems as quickly as possible).
- Make a list of the people with you and ask someone to call the list in to UPD so they know where you are sheltering and who is with you. If only students are present, one of the students should call in the list.
- Await further instructions. If possible, visit GW Campus Advisories for incident updates (<http://CampusAdvisories.gwu.edu>) or call the GW Information Line 202-994-5050.
- Make yourself comfortable and look after one other. You will get word as soon as it is safe to come out.

#### Evacuation

An evacuation will be considered if the building we are in is affected or we must move to a location of greater safety. We will always evacuate if the fire alarm sounds. In the event of an evacuation, please gather your personal belongings quickly (purse, keys, GWorld card, etc.) and proceed to the nearest exit. **(Go to the center steps in the hallway and proceed out the front of the building; or, go to the steps at the opposite end of the hallway and proceed out the back of the building.)** Do not use the elevator.

Once you have evacuated the building, proceed to our primary rendezvous location **(Lisner Auditorium lobby)**. In the event that this location is unavailable, we will meet at **(Marvin Center, outside bookstore)**.

#### Alert DC

Alert DC provides free notification by e-mail or text message during an emergency. Visit GW Campus Advisories for a link and instructions on how to sign up for alerts pertaining to GW. If you receive an Alert DC notification during class, you are encouraged to share the information immediately.

#### GW Alert

GW Alert provides popup notification to desktop and laptop computers during an emergency. In the event that we receive an alert to the computer in our classroom, we will follow the instructions given. You are also encouraged to download this application to your personal computer. Visit GW Campus Advisories to learn how.

#### Additional Information

Additional information about emergency preparedness and response at GW or the University's operating status can be found on GW Campus Advisories (<http://CampusAdvisories.gwu.edu>) or by calling the GW Information Line at 202-994-5050.