

**Structural Determination in Organic & Medicinal Chemistry**

Bing Gong  
811 NSC  
645 4307; bgong@buffalo.edu

MWF 10:00 – 10:50AM  
Baldy 105

**Office Hours:** 11:00-12:00pm, MW. Other times by appointment only. Please arrange to see me for any problems, questions or concepts that you don't understand. Try not to learn everything at the last minute.

This course deals with the identification of organic compounds utilizing a number of spectroscopic methods including 1D and 2D Nuclear Magnetic Resonance Spectroscopy, Mass Spectrometry, and Electronic Absorption & Chiroptical Spectroscopy. The emphasis of the first half of this course will be on NMR techniques. We will discuss some of the theory of each technique, along with problem solving. Because of the nature of the course, there will be problems assigned and the answers will be made available about one week after each assignment.

You are encouraged to work together on the assigned problems. There will be a direct correlation between the problems you complete and your understanding of the material. Unfortunately, so far there is no single text that covers all the topics very well, therefore Lambert has been chosen on the basis of techniques covered. This book is the most reasonable among those available.

**Textbook:**

Lambert, Shurvell, Lightner, and Cooks: *Organic Structural Spectroscopy*, Prentice Hall, 2011.  
ISBN-10: 0321592565 • ISBN-13: 9780321592569

**A Very Tentative Schedule:**

Jan 16 – Mar 6 *NMR Spectroscopy*. Lambert, Chapters 2-6

Mar 23 – Apr 17 *Mass Spectrometry*. Lambert, Chapters 7-10

Apr 21 – May 8 *Electronic Spectroscopy*. Lambert, Chap 13-14 & more

**Exam Schedule**

Midterm 1 (March 15):	35%
Midterm 2 (April 28):	25%
Final (May 15, 8:00 to 11:00am):	40%

Learning Outcomes	Assessment Tools
NMR: Understand the fundamentals of NMR spectroscopy	Midterms 1 & 2 & final exam
NMR: Grasp the concept and usage of chemical shifts for identifying basic organic structures	Midterms 1 & 2 & final exam
NMR: Use spin-spin couplings to interpret NMR spectra and identify structures	Midterms 1 & 2 & final exam
NMR: Understand spin-spin and spin-lattice relaxation	Midterms 1 & 2 & final exam
NMR: Use DEPT, 1D TOCSY and NOE in characterization of organic structures	Midterms 1 & 2 & final exam
NMR: Understand the basics of 2D NMR techniques	Midterms 1 & 2 & final exam
NMR: Use 2D NMR in characterization of organic structures	Midterms 1 & 2 & final exam
MS: Instrumentation & interpretation	Midterm 2 & final exam
Electronic Absorption Spectroscopy	Final Exam

**Courtesy:** Be considerate to others during lectures. Use of cell phones (including text messaging) is strictly prohibited during lectures. Please do not disturb others. The attendance at lectures will greatly benefit you if you can concentrate and pay full attention to the instructor. If you would like to take a nap, please find another room to enjoy yourself.

**Grading:** Any errors in the grading of exams should be presented directly to me within one week after the return of the exam papers. No regrades will be allowed after this time. If you want to have your exam regarded, return it to me along with a note explaining the nature of the error in grading. I reserve the right to regrade the entire exam even if you found only one error in your exam.

**Missed Exams:** Do not miss any exam. Only students with a documented, excused absence that is in conformance with the University guidelines for excused absences will be granted a makeup exam. Compared to the missed midterm exam, the makeup exam will cover the same subjects, be comparable in difficulty, but involve different questions. If proper documentation is provided, a student is eligible for one makeup exam. Any other missed exams will be assigned a grade of zero.

**Letter grade assignment:** The letter grade will be determined from the results of two midterm exams and the final exam based on a straight scale if possible, but realistically we may need some adjustments. The last day to drop the course is February 6. The last day to “resign” the course (receive grade “R”) is April 15. After this time, I will have (be required) to assign you a letter grade. For more details, check the Academic Calendar. For details, check <http://registrar.buffalo.edu/registration/howtoregister/drop-add-resign.php>

**Cheating:** Cheating as an insidious practice, will not be tolerated in any form and will be dealt with according to university policy. Anyone who cheats will receive a grade of zero for the exam. If a second academic dishonesty is committed, the student will automatically fail the class.

**CHE 522 Course website on UBLearn:** The URL for this site is <http://ublearns.buffalo.edu/>. Syllabus, grades from midterm and final exams, and occasional announcements will be posted on this site. Please check the site regularly for information about this course.