Syllabus
Queens College Chemistry 352, 786/7931
Organic Spectroscopy
Spring 2020

Professor William H. Hersh
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Lecture: Tu, Th 5:00 - 6:50
Where: Remsen 105
Check Blackboard for "handouts"
Office hours : Any time or by appointment

You must have Blackboard access and give Blackboard an e-mail address that you use.

If you are registered in Chem 786, it is only 3 credits, even though this is supposed to be a 4 credit course. At your option, you can register for 7931-1 (course No. 12715, Tutorial in Chemistry), in order to receive the 4th credit. The grade will be the same in 7931-1 as in 786.

Text: *Spectrometric Identification of Organic Compounds*, 8th Edition (2014), Silverstein, Webster, Kiemle, Bryce.
There are ebook and physical book versions (new and used) available from Amazon and the bookstore – make sure you get the 8th edition.

Grading: Homework (10%), Lecture Quizzes (60%), Comprehensive Final Exam (30%)
Approximate grading key: 80-100 A, 60-79 B, 50-59 C.
All exams are open note, open handouts, open book - bring your calculator; no computers or cell phones allowed.

Week	Lecture Topic	Chapter
1	NMR: Intro, ^{1}H NMR review, quiz 1	Chp 6.1, parts of Chp 3.1 - 3.5
1-3	^{13}C NMR, quiz 2	Chp 4
3	Mass Spectrometry, quiz 3	Chp 1
4-5	Infrared Spectrometry, quiz 4	Chp 2
6-9	^{1}H NMR, spin-spin coupling, Difference Spectroscopy, quiz 5	Chp 3
10-11	Combined problem solving, quiz 6 on combined problem solving	Chp 3
12-13	2D NMR, NMR Theory, quiz 7	Chp 3, 5
14	Other topics: Dynamic NMR X-ray Crystallography	

Order of topics is subject to change
Review your previous organic lecture material on MS, IR, NMR, and go through Chp 7.1 on problem solving

Dates to remember: Spring break April 8 - 16, and classes follow a Wednesday schedule on Tuesday April 7, so we have no class that day.
Last day of class is May 18.
The final exam is likely Tues May 19 or Thurs May 21, ~4-6 PM or ~6-8 PM.

Course Objectives: *To learn to determine the structures of organic compounds using modern methods and learn the theory behind these methods, including FT-NMR (^{1}H and ^{13}C), FT-IR, and mass spectrometry (mainly EI and ESI), both without and mostly with an accompanying elemental analysis; to be able to explain how a structure fits an observed spectrum, and to explain in a logical manner how a problem was solved; to learn more complex 2D methods for problem solving, and if there is time variable temperature methods for structure determination of interconverting compounds and to learn the rudiments of x-ray crystallography for use in structure determination.*

Assessment: *Problem solving ability using each individual method will be tested, and problem solving ability using combined methods will be tested. Assessment will focus on problem solving, showing how a structure fits observed spectra, and explaining how problems were solved. Assessment of knowledge of the theoretical underpinnings of each method will not be stressed, but students who go on in laboratory science will find such knowledge important for troubleshooting the instruments used to collect data.*