COLLEGE OF CHEMISTRY COURSE GUIDE (../INDEX.HTML)

CHEM 265 - NUCLEAR MAGNETIC RESONANCE THEORY AND APPLICATION (1 UNIT)

COURSE OVERVIEW

SUMMARY

Chem 265 is a 5 week graduate level course aimed at familiarizing synthetic (particularly organic) chemists with routine one- and two-dimensional NMR techniques common in structure elucidation. The course contains a lecture component listed in the course catalog as well as an **unlisted laboratory section**. Lecture focuses on NMR theory (lightly, with no real treatment of quantum or statistical mechanics), and practical applications of NMR spectroscopy. The laboratory component of this course is aimed at familiarizing students with setting up and acquiring routine 1H and 13C observe NMR experiments and is conducted in the college of chemistry NMR facility. The course features weekly problem sets (about 30% of the grade) and culminates in a three hour final examination (the remaining 70% of your grade). This course is offered only in the fall semester.

PREREQUISITES

Formal: graduate standing and Chem 200 or 201, or consent of instructor.

Notes: This course assumes a basic working knowledge of NMR and some organic chemistry.

TOPICS COVERED

- Proton NMR shifts
  - Coupling constants, topicity, chemical shift
- 13C and other heteroatom chemical shifts
- Relaxation trends
- Solvent suppression
- No-D NMR, APT, DEPT
- NOE, ROE
- 2D homo- and heteronuclear methods
- Dynamic NMR
- Approaches to structure solution

WORKLOAD

COURSEWORK

- Four problem sets (30%)
- One final exam (70%)

TIME COMMITMENT

o Problem sets easily take several (4+) hours, and are quite challenging. Three hours of lecture per week, as well as ~3-4 hours of lab per week.

CHOOSING THE COURSE

WHEN TO TAKE

After you have taken a course which treats NMR at a basic level (i.e. after a year of organic chemistry)

WHAT NEXT?

- o This course concludes what can be viewed as NMR for synthetic chemists. Those interested in the physics of NMR spectroscopy may be interested in Chem 221A (chem221a.html), though the two classes are very different from one another.

ADDITIONAL COMMENTS AND TIPS

This course is oriented nearly exclusively toward practicing synthetic chemists, and the laboratory section is one of the most useful aspects of the course for those interested in practical NMR spectroscopy.

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COLLEGE OF CHEMISTRY PEER SERVICES

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