Course Objectives

The objectives of the course are to provide students with a working knowledge of the basic NMR techniques available to the modern chemist and to allow students to gain practical experience by applying these techniques to structural problems in organic chemistry.

Course Description

The course begins with a general introduction to the NMR phenomenon, including generation and acquisition of the NMR signal, data processing and lineshape. After introducing simple proton and carbon NMR spectra, the course turns to its main focus; describing the basic tools of NMR spectroscopy and their uses.
These tools include chemical shift, J coupling, NOE and other relaxation phenomena. The use of one-dimensional techniques such as chemical shift additivity rules, spectral editing, decoupling and difference spectroscopy for solving problems in structure analysis and dynamic chemical systems will be emphasized. Two-dimensional techniques for resolving couplings, and chemical shift correlation experiments will also be illustrated by application to a wide variety of organic structural problems.

CHEMISTRY 520

Interpretation of 1D and 2D NMR Spectra

Fall 2006
Course Syllabus

Instructor: Dr. Mike McGregor
Email: mmcgregor@chm.uri.edu

Course Grading:		
	Problem Sets	30%
	Exams	40%
	Final Exam	30%

Date		Topic
09/11		Basic NMR Theory, Chemical Shift, Shielding
09/18		^{13}C Chemical Shift
09/25		Spin-Spin Coupling
10/02		Analysis of NMR Spectra
10/16	First Exam	Chemical and Magnetic Equivalence
10/23		Homonuclear Decoupling, NOE, Dynamic Systems
10/30		Heteronuclear NOE, Spectral Editing
10/24		Relaxation, Interpretive Uses of T_1
11/6		Principles of Two-Dimensional Experiments
11/13	Second Exam	J-Resolved Spectra
11/20		Homonuclear Correlation Spectra
11/27		Heteronuclear Correlation Spectra
12/04		Long-Range Correlation Spectra
12/11		Computer Assisted Identification
12/18	Final Exam	