

COURSE SYLLABUS

CHM550 Spectroscopic Methods of Structure Determination

Instructor: Dr. Mark McClure

Office: SCI 3231

Office Phone: 910-522-5706

Office Hours: MWF 10:30 – 11:30, W 2:00 – 4:00

Meeting Time: W 5:00 – 7:50 SCI 3246

Textbook (required): “Introduction to Spectroscopy” by Pavia, Lampman, and Kriz, third edition.

Course Format: the primary course format will be lecture. Although there is no formal laboratory associated with this course, we will spend some time in a laboratory setting.

Course Description: This course will focus on the acquisition and interpretation of spectroscopic data, applied primarily to organic molecules. The greatest time will be spent with NMR (Nuclear Magnetic Resonance) and IR (Infrared) techniques, but time will also be spent on UV-VIS (ultraviolet-visible spectroscopy) and mass spectrometry.

Attendance Policy: It is expected that you will be able to attend all class periods for the duration of the period. Make-up of missed work is possible only if I am notified of the absence in advance and only if the absence is excused. Excused absences are limited to illness or medical emergencies.

Grading: Three exams will be given; two 90-minute exams and a comprehensive final exam. Each exam will count 25% of your grade, 75% total for the three exams. The exam format will be primarily short-answer. The final 25% of your grade will be a series of lab reports on the various spectroscopic techniques covered. The focus of these reports will be the identification of assigned unknowns.

Schedule:

The following is a *tentative* course schedule. We may actually proceed at a faster or slower pace.

W January 10

Course Introduction, Review of Organic Functional Groups and Nomenclature

W January 17

Chapter 3: Nuclear Magnetic Resonance, Part One: Basic Concepts

W January 24

Chapter 3: Nuclear Magnetic Resonance, Part One: Basic Concepts

Chapter 5: Nuclear Magnetic Resonance, Part Three: Spin-Spin Coupling

W January 31

Chapter 5: Nuclear Magnetic Resonance, Part Three: Spin-Spin Coupling

W February 7

Chapter 4: Nuclear Magnetic Resonance, Part Two: C-13 Spectra

W February 14

Chapter 4: Nuclear Magnetic Resonance, Part Two: C-13 Spectra

Chapter 10: Nuclear Magnetic Resonance, Part Five: Advanced NMR Techniques

W February 21

Chapter 10: Nuclear Magnetic Resonance, Part Five: Advanced NMR Techniques

W February 28

Report 1 (NMR Techniques) due

EXAM1

W March 7

SPRING BREAK

W March 14

Chapter 2: Infrared Spectroscopy

W March 21

Chapter 2: Infrared Spectroscopy

W March 28

Chapter 2: Infrared Spectroscopy

W April 4

Chapter 7: Ultraviolet Spectroscopy

W April 11

Chapter 7: Ultraviolet Spectroscopy

Report 2 (IR Techniques) due

W April 18

Chapter 8: Mass Spectrometry

W April 25

Exam 2

W May 2

Final Exam (at regular time)