**Department of Chemistry Syllabus**

This syllabus is advisory only. For details on a particular instructor's syllabus (including books), consult the instructor's course page. For a list of what courses are being taught each quarter, refer to the Courses page. *Every instructor has prerogative to teach the course as they see fit and ultimately the instructor's syllabus supersedes all others.*

***CHE 205: Spectroscopy***

Approved:

Suggested Textbook: (actual textbook varies by instructor; check your instructor)

J. M. Hollas, Modern Spectroscopy (4th ed), Wiley.

Suggested Schedule:

Week 1: Properties of light

Week 2: Optics and light sources

Week 3: Interaction of light and matter; spectral lineshapes

Week 4: Frequency discrimination, monochromators, and spectrographs

Week 5: Detectors, signals, and noise

Week 6: Fourier transform spectroscopy

Week 7: Lasers and laser spectroscopy

Week 8: X-ray spectroscopy

Week 9: Applications of spectroscopy

Week 10: Applications of spectroscopy

Additional Notes:

The final two weeks of the course will cover special topics, and may be in the form of student-led presentations. A written final examination is required for this course; this may take the form of a traditional exam or a term paper.

Learning Goals:

* Students will be able to identify the principal components of, explain the operating principles of, and determine what chemical information can be obtained from spectrometers commonly used in the chemical sciences.
* Students will be able to analyze the tradeoffs inherent in spectrometer design and performance.
* Students will be able to compare the strengths and weaknesses of different spectroscopic techniques in order to determine which are appropriate for a particular situation.
* Students will be able to apply basic physical and spectroscopic principles to understand new techniques in spectroscopy.