Graduate Courses – Spring 2010 - Chemistry

532 Michael Heaven TT 8:30-9:45 Max: 18
Advanced Physical Chemistry II (Modern Techniques in Computational and Theoretical Chemistry)
This course will familiarize students with a variety of methods for current applications of quantum and classical mechanics to problems in chemistry and chemical physics. A significant portion of the course will focus on the numerical methods and software used in real applications and topics will range from electronic structure of "small molecules" to the molecular dynamics and vibrations of biomolecules using empirical force fields.

534 Tim Lian TT 10:00-11:15 Max: 18
Advanced Physical Chemistry IV
Molecular Spectroscopy. The purpose of this course is to give a rigorous introduction to the principles that govern the interaction of molecules with light and other electromagnetic radiation. The topics covered will be useful both to experimentalists and theorists.

552 Brian Dyer TT 11:30-12:45
Advanced Inorganic Chemistry II: Physical Methods
Content: The central goal of bioinorganic chemistry is to elucidate the structures and reactivities of metal centers within biomolecules. The physical methods used to explore the nature of the metal environment within a biomolecule have been critical to progress in this field. This course will explore the fundamentals of physical methods and their specific applications to problems in bioinorganic chemistry, including electronic absorbance and emission, infrared, Raman, CD, MCD, EPR and X-Ray absorption spectroscopies. Students will be evaluated on the basis of problem sets, examinations and a class presentation.
Text: Physical Methods in Bioinorganic Chemistry (Que), University Science Books; in addition, suggested background texts include: Spectroscopic Methods in Bioinorganic Chemistry (Solomon) and Biological Inorganic Chemistry (Bertini, Gray, Stiefel, Valentine).

572 David Lynn/Vince Conticello MW 8:30-9:45
Biophysical Chemistry II
The course covers advanced topics in biophysical chemistry including protein structure analysis by NMR spectroscopy.

574 Justin Gallivan TT 1:00-2:15 Max: 22
Bioorganic Chemistry
Enzymes perform the synthetic chemistry in biological systems. In this course, we will explore the remarkable synthetic chemistry performed by enzymes, the mechanistic underpinnings of these transformations, and the methods by which these mechanisms are determined. The course will be discussion-based and will draw heavily upon topics directly from the chemical literature.
Text: The Organic Chemistry of Enzyme-Catalyzed Reactions Revised Ed., R.B. Silverman, Academic Press, 2002.

523 Dennis Liotta TT 10:00-11:15 Max: 60
Advanced Organic Chemistry III
This course is designed to complete the four semester graduate organic chemistry sequence which also includes Chem 521, 522 and 524. The material covered in this course requires a thorough knowledge of physical organic chemistry, basic structural theory, organic reactions, stereochemistry, and spectroscopy. The course focuses on modern concepts and strategies for the synthesis of a broad range of organic compounds including natural and non-natural products.

524 Frank McDonald MWF 10:40-11:30 Max: 22
Spectroscopy in Organic Chemistry
Chemistry 524 is a problem-solving course in spectroscopic and spectrometric techniques used for the structural characterization of organic compounds. Methods to be studied include nuclear magnetic resonance spectroscopy (1H, 13C, 2D), infrared spectroscopy, ultraviolet / visible spectroscopy, and mass spectrometry. A major part of the course will be focused on problem-solving techniques, including the integrated application of spectroscopic and spectrometry techniques to determine structures of polyfunctionalized organic compounds.
Prerequisites: Chem 221 and 222 or equivalent (one full year of introductory organic chemistry); Chem 521 is highly recommended.

553 Craig Hill TT 2:30-3:45 Max: 18
Advanced Inorganic Chemistry III: Kinetics and Mechanism
This course focuses on the mechanisms of inorganic and organometallic reactions. The course provides both intellectual background and practical methods required for effective research in this area and in condensed phase reaction mechanisms in general. The methods to be covered include kinetics, product distribution, pertinent spectroscopic studies and the use of modern software for data processing. The subjects to be covered include determination of association stoichiometry and binding constants, rate laws, activation parameters and other features of complex mechanisms. The convergence of experimental and theoretical mechanisms and pitfalls in the study of reactions will be addressed.

722 Vince Conticello MW 10:15-11:30 Max: 20
Special topics in biomolecular chemistry literature

597 Donna Hudson TBA Max: 30
Directed Study Library Course
This course is required for all first year graduate students and BS/MS students in the Chemistry Department. It is designed to provide the new students with the information and skills needed to function efficiently and effectively in the use of library services during the pursuit of their graduate program of study and research at Emory. It will be offered as a series of seminars at the beginning of Fall and Spring Semesters. Students will receive one credit for the course; a grade of pass/fail will be issued at the end of Spring Semester.

606 Arri Eisen Jan. 11-12 TBA Max: 30
Ethics in Science

504 James Kindt TBA Max: 30
Rotations Course/Directed Study
Content: Includes rotation seminar series in September followed by 3 laboratory rotations from September 2007 – February 2008.

599 James Kindt TBA Max: 100
Thesis Research

791 Stefan Lutz M 4:15-5:15 Max: 50
Analytical/Biomolecular Seminar

792 Cora MacBeth TU 4:00-5:15 Max: 50
Inorganic Seminar

793 Simon Blakey W 2:30-3:45 Max: 50
Organic Seminar

794 Joel Bowman M 3:00-4:15 Max: 50
Physical Seminar

799 James Kindt TBA Max: 100
Advanced Thesis Research