Graduate Courses – Spring 2017 - Chemistry

**523** Nathan Jui  TT  10:00-11:15
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** Lanny Liebeskind  MW  8:30-9:45
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, 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. 

**532** Francesco Evangelista  TT  10:00-11:15
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 molecular vibrations using empirical force fields. 
Recommended textbook: Lowe and Peterson, Quantum Chemistry, 3rd Edition

**534** Michael Heaven  TT  11:30-12:45
Advanced Physical Chemistry IV (Molecular Spectroscopy)  
This course will examine the principles that govern the interactions of atoms and molecules with electromagnetic radiation. The topics covered will include rotational, vibrational and electronic spectroscopy. For each sub-topic we will examine the quantum mechanical energy level structures associated with the atoms or molecules, and the spectra that arise from transitions between stationary states. Familiarity with basic quantum mechanics and perturbation theory is assumed. This course will be of value to students working in both experimental and theoretical research areas.
553 Craig Hill TT 1:00-2:15
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.

572 David Lynn MW 11:30-12:45
Advanced BioPhysical Chemistry
This course covers advanced topics in biophysical chemistry and focuses on the design and properties of dynamic chemical networks as well as the structural analysis of native and synthetic biomolecular assemblies.

597 Chris Doty & Frank McDonald January 13, 2017
Directed Study Library Course/Proposal Development 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 and resources during the pursuit of their graduate program of study and research at Emory. For spring 2017, this course will serve as a continuation of the proposal development short course from fall 2016. During Spring Semester the ACS Style Guide, peer review, and instructor-led consultations will be used to facilitate and provide guidelines in scientific writing of a faculty sponsored research proposal on the student’s current project. Students will receive one credit for the course; a grade of pass/fail will be issued at the end of second semester.

599R: Thesis Research
791R: BioMolecular Seminar
792R: Inorganic Seminar
793R: Organic Seminar
794R: Physical Seminar
799R: Advanced Research