Graduate Course Descriptions

24-501. ADVANCED LABORATORY TECHNIQUES.
Advanced techniques and sophisticated equipment used in the preparation and/or purification of chemical compounds. Two lectures and one 150 minute laboratory period per week. Prerequisites: Chemistry 301-302, 306 and 308 or equivalent courses. Credit, three hours.

24-502. PHYSICAL METHODS IN INORGANIC CHEMISTRY.
Advanced methods in inorganic preparations and compound analyses via physical methods. Two lectures and one 150 minute laboratory period per week. Prerequisites: Chemistry 301-302, 303-304, 306 and 308 or equivalent courses. Credit, three hours.

24-503. PHYSICAL METHODS IN BIOCHEMISTRY.
Advanced methods in the study of biochemical molecules and the use of physical methods in their investigations. Two lectures and one 150 minute laboratory period per week. Prerequisites: Chemistry 301-302, 303-304, 306 and 403 or equivalent courses. Credit, three hours.

24-504. PHYSICAL METHODS IN ORGANIC CHEMISTRY.
Advanced studies in organic preparations and reactions, and chemical analyses via physical methods. Two lectures and one 150 minute laboratory period per week. Prerequisites: Chemistry 301-302, 303-304, 306 or equivalent courses. Credit, three hours.

24-505. INORGANIC SOLUTION CHEMISTRY.
A study of the chemical kinetics of chemical forces and their effects on structure and reactivity of coordination compounds. Two 75 minute lectures per week. Prerequisite: Chemistry 308 or equivalent. Credit, three hours.

24-506. STRUCTURAL INORGANIC CHEMISTRY.
Detailed discussions of the nature of chemical forces and their effects on structure and reactivity of coordination compounds. One 150 minute lecture per week. Prerequisite: Chemistry 308 or equivalent. Credit, three hours.

24-507. THEORY AND APPLICATIONS OF SPECTROSCOPY.
A presentation of molecular spectra and structure correlations demonstrating the use of IR, Visible UV, NMR, and AA. One 150 minute lecture per week. Credit, three hours.

24-508. THEORY AND APPLICATIONS OF CHROMATOGRAPHY.
Investigations of the separation and identification of substances via packed and capillary column gas chromatography. HPLC and GLC using various detectors. One 150 minute lecture per week. Prerequisite: Chemistry 306 or equivalent. Credit, three hours.

24-509. THE CHEMICAL BOND.
The study of electronics in atoms, molecular orbitals bonding in organic compounds, and "d" valence orbitals. One 150 minute lecture per week. Prerequisite: Chemistry 308 or equivalent. Credit, three hours.

24-510. ENVIRONMENTAL CHEMISTRY.
The analyses of water, soil, plant and animal tissues for various parameters including traces organics and metals using classical and instrumental methods of analysis. One lectures 150 minute per week. Credit, three hours.

24-511. SELECTED TOPICS IN CHEMISTRY.
Advanced topics in the various fields of chemistry. Topics may vary from year to year. One 150 minute lecture per week. Credit, three hours.

24-516. QUANTUM CHEMISTRY.
The wave equation and approximate treatments of the hydrogen molecular ion, the hydrogen molecule, diatomic molecules, and polyatomic molecules. Two 75 minute lectures per week. Prerequisite: Chemistry 301-302, 303-304 or equivalent courses. Credit, three hours.

24-518. MOLECULAR SPECTROSCOPY.
The use of molecular symmetry and group theory to study rotational, vibrational, and electronic spectra of molecules. One 150 minute lecture per week. Prerequisite: Chemistry 301-302 or equivalent. Credit, three hours.

24-519. APPLICATIONS OF SPECTROSCOPY.
An introduction to chemical research. The use of spectroscopy as a research tool and a review of the literature in this area will be conducted. Projects may be assigned. Two 75 minute lectures per week. Prerequisite: Chemistry 507 or equivalent. Credit, three hours.

24-520. ADVANCED ORGANIC CHEMISTRY.
An advanced study of reaction mechanisms, stereochemistry, and organic chemical bonding. One 150 minute lecture per week. Prerequisite: Chemistry 301-302. Credit, three hours.

24-521. BIOCHEMISTRY.
An advanced study of biochemical reactions and reaction mechanisms. One 150 minute lecture per week. Prerequisite: Chemistry 403 or equivalent. Credit, three hours.

24-540. ADVANCED METHODS OF TEACHING CHEMISTRY.
Discussions and problem solving sessions concerning improved techniques of teaching high school chemistry. Two 75 minute lectures per week. Credit, three hours.

24-552. TECHNIQUES IN PHYSICAL CHEMISTRY.
A study of the use of physical measurements in determining composition, structures, and properties of matter. Two lectures and one 150 minute laboratory per week. Credit, three hours.

24-556 557. SEMINAR.
Presentation of current topics and/or research by faculty and students. One lecture per week. Credit, one hour.

24-560. CHEMICAL LITERATURE.
Use of the chemistry library, chemical journals, reference works, other technical publications, assembling and data use, and computer assisted literature searches. One lecture per week. Credit, one hour.

24-562. CHEMICAL TOXICOLOGY.
A study of the adverse effects of chemical substances. Course includes the general principles of toxicology, the toxicology of systems, toxic agents, environmental toxicology, forensic toxicology, applications toxicology and the effect of toxic substances on reproduction and the body. One lecture per week. Credit, one hour.

24-569. POLYMER CHEMISTRY.
An introduction to the chemistry of macromolecules including biologically molecules, plastics, and other important classes of industrial polymers. One 150 minute lecture per week. Prerequisites: Chemistry 301-302. Credit, three hours.

24-573. ADVANCED PHYSICAL CHEMISTRY.
An introduction to the thermodynamics of large molecular collections and the quantum statistics of these systems. One 150 minute lecture per week. Prerequisites: Chemistry 303-304. Credit, three hours.

24-590 591. RESEARCH AND THESIS.
Publishable research work by students and the writing and defense of a thesis. Credit, three hours each.

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