

# Chemistry (CHEM)

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## Courses

### **CHEM 520. Thermodynamics and Kinetics. 3 Credits.**

Temperature, heat and work, thermodynamic properties of gases, solids and solutions; homogeneous and heterogeneous equilibria; thermodynamics of electrochemical cells; statistical thermodynamics; calculation of thermodynamic properties; chemical kinetics.

P: gr st.

Fall Only.

### **CHEM 522. Thermodynamics and Kinetics Laboratory. 1 Credit.**

Laboratory course to accompany Chem 520.

P: gr st; and Chem 520 or conc enr or Physics 520 or conc enr.

Fall Only.

### **CHEM 530. Biochemistry. 3 Credits.**

Nature and function of the important constituents of living matter, their biosynthesis and degradation; energy transformation, protein synthesis and metabolic control.

P: gr st.

Fall Only.

### **CHEM 531. Biochemistry Laboratory. 1 Credit.**

Laboratory course to accompany Chem 530.

P: gr st.

Fall Only.

### **CHEM 602. Advanced Organic Chemistry. 3 Credits.**

Physical organic approach to chemistry; reaction mechanisms, molecular orbital theory, conservation of orbital symmetry, aromaticity, stereochemistry, linear free energy relationships, isotopes effects, pericyclic reactions, photochemistry, natural products and advanced topics in molecular spectroscopy.

P: gr st.

Fall Odd.

### **CHEM 603. Advanced Organic Chemistry Laboratory. 1 Credit.**

Laboratory course to accompany Chem 602; advanced molecular spectroscopy, organic qualitative analysis, physical organic chemistry experiments.

P: Chem 602 or conc enr.

Fall Odd.

### **CHEM 607. Molecular Biology. 3 Credits.**

Molecular approaches to biological problems, emphasizing study of informational macro molecules. Topics include replication, control, expression, organization, and manipulation of genes; RNA processing; protein processing; transposons; oncogenes, growth factors; genetic control of development and the immune system.

P: gr st.

Spring Odd.

### **CHEM 608. Molecular Biology Laboratory. 1 Credit.**

Molecular biology of nucleic acids and the techniques that form the basis of biotechnology. Topics include electrophoresis, restriction mapping, hybridization, plasmid analysis, and DNA cloning (recombinant DNA library construction, screening, and mapping).

P: gr st.

Spring Odd.

### **CHEM 613. Instrumental Analysis. 4 Credits.**

Theory and practice of analysis by instrumental methods, including methods based on absorption and emission of radiation, electroanalytic methods, chromatographic methods and radiochemical methods.

P: gr st.

Fall Only.

### **CHEM 617. Nuclear Physics and Radiochemistry. 3 Credits.**

Properties and reactions of atomic nuclei; application of the properties of radioactive nuclei to the solution of chemical, physical, biological and environmental problems.

P: gr st.

Spring Even.

### **CHEM 634. Environmental Chemistry. 3 Credits.**

Physical, chemical, and biological processes affecting the composition of air and water. Chemical reactions in polluted, and unpolluted environments; dispersal processes and methods of control for various pollutants.

P: gr st.

Fall Only.

**CHEM 635. Environmental Chemistry Laboratory. 1 Credit.**

Basic measurement techniques used by environmental scientists to evaluate air and water quality; field methods, continuous monitoring techniques, and in-laboratory analysis techniques. Experiments demonstrate reaction kinetics, stoichiometry, thermodynamics instrumentation, and wet chemical methods.

P: gr st.

Fall Only.