Chemistry Courses

CHEM 5110 Lab Management and Safety (2 credits)
Laboratory management concepts, safety information concerning chemical substances.

CHEM 5140 Chemical Toxicology (3 credits)
Chemical principles in toxicology. Design of environmentally safer chemicals; quantitative analysis of the toxicity of various molecules.

CHEM 5210 Interpretation of Spectral Data (2 credits)
Systematic identification of chemical structures utilizing data from mass spectrometry, infrared spectroscopy, and nuclear magnetic resonance spectroscopy.

CHEM 5320 Special Topics in Organic Chemistry (1-3 credits)
Selected topics such as advanced synthesis, advanced reaction mechanisms, polymers, and natural products. May be repeated when topic is changed.

CHEM 5411 Biochemistry I (3 credits)
General biochemistry with an introduction to the chemical principles governing proteins and nucleic acids. Emphasis on the conformation, dynamics, and function of proteins.

CHEM 5412 Biochemistry II (3 credits)
General biochemistry with an emphasis on the chemical aspects of metabolism, biosynthesis, and the replication and expression of genes. Continuation of CHEM 5411.

CHEM 5420 Special Topics in Biochemistry (1-3 credits)
Selected topics such as carbohydrates, lipids, proteins, enzymology, nucleic acids, metabolism, toxicology, and biochemical lab techniques. May be repeated when topic is changed. Prerequisite: CHEM 5411.

CHEM 5471 Biochemistry Laboratory I (1 credit)
Laboratory techniques pertaining to biochemistry. Corequisite: CHEM 5411.

CHEM 5472 Biochemistry Lab II (1 credit)
Laboratory techniques pertaining to biochemistry. Corequisite: CHEM 5412.

CHEM 5510 Instrumental Methods of Analysis (3 credits)
Theory and applications of instrumental methods of chemical analysis. Prerequisite: CHEM 5712.

CHEM 5520 Special Topics in Analytical Chemistry (1-3 credits)
Selected topics such as mass spectrometry, NMR, electrochemistry, chemical separations, and computerized instrument interfaces.

CHEM 5571 Instrumental Analysis I Laboratory (0 credit)
Experimental applications of instrumental methods of chemical analysis.

CHEM 5572 Instrumental Analysis Laboratory II (1 credit)
Experimental applications of instrumental methods of chemical analysis. Continuation of CHEM 5571. Prerequisite: CHEM 5571.

CHEM 5614 Medicinal Chemistry: Drug Design (3 credits)
This course focuses on drug design and development, as well as the absorption, distribution, metabolism and excretion of drug molecules. Organic chemistry principles vital to drug synthesis and case studies of clinically relevant drugs will be incorporated. Prerequisite(s): Degree in Biology, Chemistry, or related field.

CHEM 5615 Medicinal Chemistry: Drug Action (3 credits)
This course focuses on drug targets such as enzymes, receptors, and nucleic acids and the mechanisms by which pharmaceuticals alter the normal cellular activity. Common classes of pharmaceuticals (antibacterial, antiviral, anticancer, opioids, etc) will be explored. Progress in pharmaceutical development will be highlighted through the incorporation of current literature article and drugs undergoing clinical trials. Prerequisite(s): Degree in Biology, Chemistry, or related field.

CHEM 5711 Physical Chemistry I (3 credits)
Fundamental understanding of chemical and physical properties of atoms and molecules through quantum mechanical and classical approaches.

CHEM 5712 Physical Chemistry II (3 credits)
Fundamental understanding of chemical and physical properties of atoms and molecules through quantum mechanical and classical approaches. Prerequisite: CHEM 5711.

CHEM 5720 Special Topics in Physical Chemistry (1-3 credits)
Selected topics such as kinetics, thermodynamics, quantum chemistry, and molecular modeling.

CHEM 5771 Physical Chemistry Laboratory I (1 credit)
Physical chemistry laboratory applications. Corequisite: CHEM 5711.

CHEM 5772 Physical Chemistry Lab II (1 credit)
Physical chemistry laboratory applications. Continuation of 5771.

CHEM 5811 Adv Inorganic Chemistry I (3 credits)
Theoretical approach to the principles of inorganic chemistry. Integration of theory and descriptive chemistry.

CHEM 5812 Advanced Inorganic Chemistry II (3 credits)
Continuation of the study of the theoretical approaches to the principles of inorganic chemistry.

CHEM 5820 Special Topics in Inorganic Chemistry (1-3 credits)
Selected topics such as organometallics, catalysis, bioinorganic chemistry, and materials chemistry.

CHEM 5871 Inorganic Chemistry Laboratory I (1 credit)
Laboratory oriented approach emphasizing techniques of preparative inorganic chemistry. Prerequisite or corequisite: CHEM 5711.

CHEM 5872 Inorganic Chemistry Laboratory II (1 credit)
Laboratory oriented approach emphasizing techniques of preparative inorganic chemistry. Continuation of CHEM 5871. Prerequisite or corequisite: CHEM 5871.

All-University Courses

The course numbers listed below, not always included in the semester class schedule, may be registered for by consent of the advisor, instructor, or department chair, or may be assigned by the department when warranted. Individual registration requires previous arrangement by the student and the completion of any required form or planning outline as well as any prerequisites.

1910, 2910, 3910, 4910 DIRECTED INDEPENDENT STUDY
1920, 2920, 3920, 4920 DIRECTED GROUP STUDY
1930, 2930, 3930, 4930 EXPERIMENTAL COURSE
1940, 2940, 3940, 4940 IN-SERVICE COURSE
1950, 2950, 3950, 4950 WORKSHOP, INSTITUTE, TOUR
1960, 2960, 3960, 4960 SPECIAL PURPOSE INSTRUCTION
1970, 2970, 3970, 4970 INTERNSHIP
1980, 2980, 3980, 4980 RESEARCH
1990, 2990, 3990, 4990 THESIS