The major objective for this course is to teach the modern method of scientific problem solving using organic compounds as models. Emphasis will be on the chemical language (nomenclature and terminology), molecular electronic concepts, theories of organic reactions, stereochemistry and structure elucidation of organic compounds. Prerequisite: Completion of CHEM 241 with a grade of "C-" or higher.
CHEM 242L. Organic Chemistry Laboratory. 2 credits.
This course will present laboratory techniques and experiments associated with organic chemistry, including an introduction to synthesis, spectroscopic methods, chromatographic techniques and some qualitative organic analysis. Corequisite: CHEM 242. Prerequisites: A grade of "C-" or higher in CHEM 241.
CHEM 260. Concepts of Biochemistry. 3 credits.
A brief survey of the principal constituents of living cells, proteins, carbohydrates, lipids and nucleic acids, with emphasis on their synthesis and transformations in vivo. Intermediary metabolism and protein replication will be stressed. Not available for major or minor credit. Prerequisite: CHEM 241 and CHEM 241L.
CHEM 260L. Concepts of Biochemistry Laboratory. 1 credit.
The laboratory work will comprise experiments demonstrating some of the pertinent reactions including those of analytical value. Prerequisite or corequisite: CHEM 260.

CHEM 270. Inorganic Chemistry I. 3 credits.
A survey of the chemistry of the elements and modern theories of bonding. Prerequisite: A grade of "C-" or higher in CHEM 132.
CHEM 280. An Alternative Lower-Division Chemistry Experience. 1-4 credits.
This course will provide a mechanism for offering a nontraditional, lower-division, lecture and/or laboratory course. It will be offered only with the approval of the full-time teaching faculty. No course will be offered more than three times under the 280 designation. Students may repeat CHEM 280 for credit when course content changes.
CHEM 280L. Integrated Inorganic/Organic Laboratory. 2 credits.
An enriched, integrated introduction to the laboratory procedures associated with inorganic and organic chemistry. Topics include apparatus design and construction, synthesis, separation methods, spectroscopic analysis and application of computers in the laboratory. Prerequisite or corequisite: CHEM 241.
CHEM 288L. Integrated Inorganic/Organic Laboratory. 2 credits.
An enriched, integrated introduction to the laboratory procedures associated with inorganic and organic chemistry. Topics include apparatus design and construction, synthesis, separation methods, spectroscopic analysis and application of computers in the laboratory. Prerequisite: A grade of "C-" or better in CHEM 241. Prerequisite or corequisite: CHEM 270.
CHEM 325. Chemical Hazards and Laboratory Safety. 1 credit.
A brief introduction to physical and chemical hazards which may be encountered in a laboratory setting. Methods of personal protection will be emphasized.
CHEM 331. Physical Chemistry I. 3 credits.
A study of thermodynamics, solutions, kinetics and macromolecules with applications of chemical and biological problems. Prerequisites: CHEM 132, MATH 238 and PHYS 240.
CHEM 338L. Applied Physical Chemistry Laboratory. 2 credits.
A laboratory course which emphasizes the applied experimental aspects of physical chemistry. Prerequisite or corequisite: CHEM 331.
CHEM 351. Analytical Chemistry. 4 credits.
The total analysis concept is introduced and developed. This framework encompasses the areas of experiment design, sample collection and treatment, and statistical evaluation of results, as well as standard analysis techniques. Prerequisite: CHEM 132.
CHEM 352. Instrumental Analysis. 3 credits.
This course emphasizes the application of instrumental techniques to the quantitative determination of chemical composition. Both instrument theory and practical applications are presented. Prerequisites: CHEM 351 and MATH 235.
CHEM 352L. Instrumental Analysis Laboratory. 2 credits.
This course will introduce students to the methodology and technology associated with the design and use of chemical instrumentation. Students perform experiments that illustrate the theoretical principles associated with instrument designs and the application of instruments to the solution of qualitative and quantitative analysis problems. Corequisite: CHEM 352.

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CHEM 242. Physical Chemistry II. 3 credits.
A study of atomic and molecular energy levels and structure as interpreted by quantum theory. Prerequisites: CHEM 132 and MATH 226 and PHYS 250.

CHEM 438L. Physical Chemistry Laboratory. 2 credits.
A laboratory course which emphasizes the application of various physical measurement techniques as a means of obtaining data to test fundamental chemical theory. Corequisite: CHEM 432.

CHEM 440. Intermediate Organic Chemistry. 3 credits.
An advanced study of the theory of organic chemistry as applied to chemical reactions and synthetic methods. Such topics as reaction mechanisms, spectroscopy and stereochemistry will be included. Prerequisite: CHEM 242.

CHEM 445. Polymer Chemistry. 4 credits.
A study of the synthesis and characterization of macromolecules. Polymer chemistry is discussed in a manner that focuses most attention on the properties of macromolecules that can be understood at the molecular level. Prerequisite: CHEM 242.

CHEM 450. Nuclear and Radiation Chemistry. 3 credits.
A study of the fundamentals of radioactivity in chemistry. Topics include the effects of radiation on matter, measurement of radiation, activation analysis, tracer studies and the nuclear fuel cycle. Applications of radioactive materials and radiation in industry and medicine will be described. Prerequisites: CHEM 132 and PHYS 250 or permission of the instructor.

CHEM 450L. Laboratory for Nuclear and Radiation Chemistry. 1 credit.
A laboratory course designed to demonstrate the topics covered in CHEM 450. Corequisite: CHEM 450. Prerequisites: CHEM 132 and PHYS 250 or permission of the instructor.

CHEM/PHYS 455. Lasers and Their Applications to Physical Sciences. 3 credits.
An introduction to both the theoretical and practical aspects of lasers and their applications in the physical sciences. Prerequisite: PHYS 270, CHEM 331 or permission of the instructor.

CHEM 470. Inorganic Chemistry II. 3 credits.
A study of selected topics in the field of advanced inorganic chemistry. Prerequisite: A grade of "C" or higher in CHEM 270. Prerequisite or corequisite: CHEM 331.

CHEM 480. Selected Topics in Chemistry. 1-4 credits each semester.
This course is designed to allow an in-depth study of specific topics in chemistry selected according to student and faculty interests.

CHEM 481. Literature and Seminar I. 1 credit.
Provides instruction in methods of abstracting specific information from the body of chemical literature. Attendance at regularly scheduled department seminars is required.

CHEM 482. Literature and Seminar II. 1 credit.
Provides practice in preparing and presenting a literature-based seminar and paper on a chemical topic. Attendance at regularly scheduled department seminars is required. Prerequisite: CHEM 461 or permission of the instructor.

CHEM 494. Internship in Chemistry. 1-2 credits. May be repeated for a maximum of 6 credits.
Students participate in research or applied chemistry outside of the university. A proposal must be approved prior to registration, and a final paper will be completed.

CHEM 497A, B, C. Undergraduate Chemical Research. 2-4 credits, repeatable for a total of 6 credits.
Research in a selected area of chemistry, as arranged with and approved by a faculty research advisor the semester prior to registration.

CHEM 499. Honors. 6 credits.