

CHEMISTRY

CHEM 101 (4 cr hrs)

General Chemistry I

An introduction to the fundamentals of chemistry. Such topics as atomic theory, chemical bonding, stoichiometry, solutions, and pH are covered. Both lecture and laboratory are required for this course.

Generals Studies Outcome: Methods of Inq & Explanatory Schema - Nat Science

CHEM 102 (4 cr hrs)

General Chemistry II

This course is an application of the fundamentals of chemistry, including states of matter, oxidation-reduction, thermochemistry, chemical equilibrium, kinetics, nuclear chemistry, and descriptive chemistry. Both lecture and laboratory are required for this course.

Prerequisite Required: CHEM 101

Generals Studies Outcome: Methods of Inq & Explanatory Schema - Nat Science

CHEM 205 (4 cr hrs)

Principles of Qualitative Analysis

This course presents the fundamental principles of qualitative analysis and their technical application in the laboratory. Both lecture and laboratory are required for this course.

Prerequisites Required: CHEM 101, CHEM 102

Generals Studies Outcome: Methods of Inq & Explanatory Schema - Nat Science

CHEM 206 (4 cr hrs)

Principles of Quantitative Analysis

This course continues to present the fundamental principles of quantitative analysis and their technical application in the laboratory. Both lecture and laboratory are required for this course.

Prerequisite Required: CHEM 205

Generals Studies Outcome: Methods of Inq & Explanatory Schema - Nat Science

CHEM 210 (4 cr hrs)

Analytical Chemistry

This course presents the fundamental principles of qualitative and quantitative chemical analysis as well as their technical application in the laboratory. Classical methods of analytical chemistry, chemical equilibrium calculations, and error analysis will be applied to experimental measurements and data. Both lecture and laboratory are required for this course.

Prerequisite Required: CHEM 102

Generals Studies Outcome: Methods of Inq & Explanatory Schema - Nat Science

CHEM 220 (4 cr hrs)

Intro to Nanotechnology

This course presents an analytical approach to the fundamental principles of nano-structured materials. Synthetic methods, analytical characterization techniques, and current advances in the nanotechnology field will be emphasized. The type of nano-structure materials to be studied include: nanocrystals, nano-wires, carbon-based nanostructure, porous structures, and catalysts. The synthetic methods will correspond to bottom-up approaches and will highlight solution-phase techniques such as micelle-templated, sol-gel, and non-hydrolytic molecular decomposition. Characterization methods that will be discussed include electron microscopy (transmission and scanning), UV-visible absorption and fluorescence, atomic force microscopy, X-ray diffraction (powder and single crystal), scanning tunneling microscopy, and Langmuir adsorption. Both lecture and laboratory are required for this course.

Prerequisites Required: CHEM 102, 210

Generals Studies Outcome: Methods of Inq & Explanatory Schema - Nat Science

CHEM 301 (4 cr hrs)

Introductory Organic and Biochemistry

This is a condensed conceptual course in organic and biochemistry. This course serves as a terminal organic and biochemistry course for the Natural Science option. It also serves as a preparatory course for Biochemistry and Biochemical techniques. Both lecture and laboratory are required for this course.

Prerequisites Required: CHEM 101, CHEM 102

Generals Studies Outcome: Methods of Inq & Explanatory Schema - Nat Science

CHEM 303 (5 cr hrs)**Organic Chemistry I**

This course introduces the chemistry of aliphatic and aromatic compounds, reaction mechanisms and stereochemistry. Both lecture and laboratory are required for this course.

Prerequisites Required: CHEM 101, CHEM 102

Generals Studies Outcome: Methods of Inq & Explanatory Schema - Nat Science

CHEM 304 (5 cr hrs)**Organic Chemistry II**

This course is a continuation of Chem 303 with emphasis on the chemistry and detection of functional groups. The laboratory emphasis is on methods of qualitative organic analysis. Both lecture and laboratory are required for this course.

Prerequisite Required: CHEM 303

Generals Studies Outcome: Methods of Inq & Explanatory Schema - Nat Science

CHEM 431 (4 cr hrs)**Biochemistry and Biochemical Techniques**

The chemical foundations of molecular biology with an emphasis on the molecular aspects of intermediary metabolism are studied. Both lecture and laboratory are required for this course.

Prerequisites Required: CHEM 301 or CHEM 303

Generals Studies Outcome: Methods of Inq & Explanatory Schema - Nat Science

CHEM 461 (4 cr hrs)**Molecular Biology and Molecular Techniques**

The foundation techniques of molecular biology with an emphasis on the molecular nature and function of genes and contemporary molecular techniques. Both lecture and laboratory are required for this course.

Prerequisite Required: CHEM 431

Generals Studies Outcome: Methods of Inq & Explanatory Schema - Nat Science

CHEM 490 (3 cr hrs)**Undergraduate Research Thesis**

Type I and Type II thesis options are available and are completed in close cooperation with a faculty mentor. Type I Option: the student will conceive, design and conduct an independent experimental research project in natural science. The resulting data and conclusions will be reported in the form of a platform presentation to a professional society and/or a technical manuscript submitted for review/publication in a professional scientific journal. Type II Option: the student will conceive, design and conduct an independent review of the technical literature on a specific topic in natural science. The resulting literature review and synthesis will be reported in the form of a platform presentation to a professional society and/or a technical manuscript submitted for review/publication in a professional scientific journal. This is a capstone course for the Biological, Wildlife or Biochemical Science options and includes a student senior competency defense. Arranged.

Generals Studies Outcome: Methods of Inq & Explanatory Schema - Nat Science

