

CAREER PREPARATION

PREP 100 Career Preparation:

Life Planning for the 21st Century (1 sem. hr.)

PREP 100 is required for all Co-operative Education students and open to any student interested in exploring career options and learning effective job search methods. Course content includes personal assessment, job search strategies, labour market trends and principles of career planning from a Christian perspective.

NB: Pass/Fail course.

Prerequisite(s): None.

CHEMISTRY

CHEM 101 Introduction to General Chemistry
(3 sem. hrs.)

Introduction to chemical concepts: stoichiometry, thermochemistry, the periodic table, bonding, nature of solutions, the physical behaviour of gases, and acids and bases. Course lectures are concurrent with those of CHEM 103 but the term is shorter. This course is terminal and is provided for non-science majors wishing to fulfil their laboratory science requirement.

Prerequisite(s): None. (4-1-3; 0-0-0)

CHEM 103 General Chemistry I (3 sem. hrs.)

This course is intended for students with little or no high school chemistry and therefore is usually not open to students with Chemistry 12. As an introduction to chemical concepts, topics include stoichiometry, the gas laws, thermochemistry, the periodic table, bonding, nature of solutions, acids and bases, and oxidation/reduction.

NB: CHEM 104 is the normal sequel to CHEM 103.

However, for students receiving a B or higher in CHEM 103, CHEM 112 may be taken in second semester.

Prerequisite(s): None. (4-1-3; 0-0-0)

CHEM 104 General Chemistry II (3 sem. hrs.)

A continuation of CHEM 103: Chemical equilibrium, chemical kinetics, the nature of organic substances and some of their basic reactions. These concepts are discussed as far as possible in the context of their significance in life processes, in industrial processes, and in the environment.

Prerequisite(s): CHEM 103 or equivalent or instructor's consent. (0-0-0; 3-1-3)

CHEM 111, 112 Principles of Chemistry (3, 3 sem. hrs.)

Modern concepts in the fundamental laws and principles of chemistry: molecular bonding and structure, stoichiometry, and chemical calculations, thermochemistry, nature of solutions, introduction to chemical kinetics, chemical equilibrium, acids, bases and buffer systems, elementary energy concepts, introduction to organic chemistry, and descriptive inorganic chemistry.

NB: Credit is not given for both CHEM 103, 104; and CHEM 111, 112.

Prerequisite(s): Chemistry 11 or 12 or equivalent. (3-1-3; 3-1-3)

CHEM 221, 222 Organic Chemistry (3, 3 sem. hrs.)

An introduction to theoretical, physical, and descriptive organic chemistry. A study of the properties of aliphatic, alicyclic, and s reactions, and syntheses of organic chemistry.

NB: CHEM 221 should precede CHEM 222.

Prerequisite(s): CHEM 111, 112; or CHEM 103, 112; or CHEM 103, 104 with instructor's consent. (3-1-4; 3-1-4)

CHEM 230 Inorganic Chemistry (3 sem. hrs.)

Chemical and physical properties of the elements and inorganic compounds using atomic orbital theory and the theory of bonding in molecules and crystalline solids. Main group element chemistry and the structure of the periodic table are emphasized throughout.

Prerequisite(s): CHEM 111, 112; or CHEM 103, 112; or CHEM 103, 104 with instructor's consent. (3-0 or 3-0)

CHEM 240 Physical Chemistry (3 sem. hrs.)

Introduction to thermodynamics as applied to chemical reactions. The First and Second Laws of Thermodynamics, free energy and equilibria, phase equilibria, and electrochemistry.

NB: Not offered every year. See Department chair.

Cross-listed: PHYS 240.

Prerequisite(s): CHEM 111, 112; or CHEM 103, 112; or CHEM 103, 104 with instructor's consent; MATH 123, 124. (3-4 or 3-4)

CHEM 321, 322 Advanced Organic Chemistry
(3, 3 sem. hrs.)

Methods for spectroscopic determination of structures in organic chemistry. Functional chemistry of organic substances that have particular relevance to the life sciences. Modern synthetic techniques for functional group transformation. Principles involved in the planning and execution of multi-step synthesis of organic molecules. Laboratory in synthetic methods and spectroscopic techniques.

NB: Not offered every year. See Department chair.

Prerequisite(s): CHEM 221, 222. (3-4; 3-0)

CHEM 341, 342 Advanced Physical Chemistry
(3, 3 sem. hrs.)

The fundamental concepts of matter and its structure in relation to energy. Quantum mechanics, statistical thermodynamics, spectroscopy, kinetics, and the solid state.

NB: Not offered every year. See Department chair.

Cross-listed: CHEM 341 is cross-listed as PHYS 341.

Co-requisite: MATH 223.

Prerequisite(s): CHEM 240. (3-4; 3-0)

CHEM 357, 358 Modern Analytical Methods
(3, 3 sem. hrs.)

Introduction to the theory and practice of analytical chemistry. After a review of the basic laboratory techniques used in pure and applied chemistry and in biological chemistry, this course discusses a number of instrumental techniques, particularly those based on chromatographic, electromagnetic radiation, and electrochemical theories.

NB: This course replaces CHEM 355, 356. CHEM 357 should precede CHEM 358. Not offered every year. See Department chair.

Prerequisite(s): CHEM 111, 112; or CHEM 103, 112; or CHEM 103, 104; and a 200 level or above chemistry lab course. (3-4; 3-4)

CHEM 370 Environmental Chemistry (3 sem. hrs.)

The study of chemical reactions as they relate to the environment. Emphasis is placed on the deleterious effects that human activities and technologies, which make use of applied chemistry, have had on atmospheric, aquatic, and terrestrial systems. Alternate methods to alleviate environmental problems are considered.

Prerequisite(s): CHEM 111, 112; or CHEM 103, 112; or CHEM 103, 104. CHEM 221, 222 recommended. (0-0; 3-4)

CHEM 372 Molecular Genetics (3 sem. hrs.)

This class considers modern developments and techniques in genetics, especially the basic and applied aspects of recombinant DNA technology.

NB: CHEM 372 may only be applied to the Life Sciences Emphasis Program in Chemistry.

Cross-listed: BIOL 372.

Prerequisite(s): BIOL 113, 114; 223; CHEM 103, 104; or 103, 112; or 111, 112. CHEM 221, 222 recommended. (0-0; 3-3)

CHEM 384 Principles of Biochemistry (3 sem. hrs.)

The chemical structure, function, and metabolism of carbohydrates, lipids, proteins, and nucleic acids. This class is continued as CHEM 386.

Cross-listed: BIOL 384.

Co-requisite: CHEM 221, 222.