CHEMISTRY (CHEM)

This is a list of the Chemistry (CHEM) courses available at KPU.

Enrolment in some sections of these courses is restricted to students in particular programs. See the Course Planner - kpu.ca/regISTRATION/Timetables - for current information about individual courses.

For information about transfer of credit amongst institutions in B.C. and to see how individual courses transfer, go to the BC Transfer Guide bctransferguide.ca

Note: Student with physical, mental, or learning disabilities who need accommodations for courses or labs are required to contact the Services for Students with Disabilities department and encouraged to discuss course learning outcomes with the course or lab instructors.

CHEM 1101 4 Credits
CSI: Chemical Sciences Investigation
Students will learn introductory chemical concepts framed in the context of the forensic sciences and will perform some of the techniques seen on crime shows. Students will, for example, examine latent fingerprints by fuming and dusting a variety of surfaces, analyze soil samples, and identify a crime scene plastic sample by density analysis and flame tests. This course would be of particular interest to students pursuing a career as an elementary level educator.

NOTE: This course is intended for students with little background in math and sciences that have a quantitative requirement (or need lab-sciences credit) to complete a Bachelor's degree in the Arts or Humanities. This course may not be used for credit towards a science degree or as a prerequisite for further science courses. This course may be used to partially fulfill quantitative requirements for a Bachelor of Arts degree, science requirements for an elementary teacher education program, lab science requirements for an Associate of Arts degree, and liberal education/breadth credits for KPU degrees.

Attributes: QUAN, PATH-3

CHEM 1110 4 Credits
Physical Chemistry for Life Sciences
Students will learn about stoichiometry, gases, liquids, solids and solutions, equilibrium, acids and bases, thermodynamics, and chemical kinetics. They will also perform laboratory work.

Prerequisites: Level A1 as defined in the Math Alternatives Table, and either CHEM 1105 or Chemistry 12 (C+).

Attributes: QUAN

CHEM 1115 4 Credits
Chemical Energetics and Dynamics
Students will learn about topics including liquids, solutions, equilibrium, acids and bases, thermodynamics, and chemical kinetics. They will also perform laboratory work.

Prerequisites: Level A1 as defined in the Math Alternatives Table, and either CHEM 1105 or Chemistry 12 (C+).

Attributes: QUAN

CHEM 1120 4 Credits
Analytical Chemistry
Students will learn the fundamental concepts of analytical chemistry. They will study quantitative analysis of aqueous solutions and solid samples, experimental design and data analysis, as well as spectroscopic and chromatographic methods. Students will engage in extensive laboratory work and practical applications.

Prerequisites: CHEM 1210

Attributes: QUAN

In the event of a discrepancy between this document and the official KPU 2017-18 Calendar (available at www.kpu.ca/calendar/2017-18), the official calendar shall be deemed correct.
CHEM 2320 4 Credits
Organic Chemistry I
Students will study the fundamental aspects of modern organic chemistry as illustrated by the structure, physical and spectroscopic properties and reactions of alkanes, cycloalkanes, alkenes, dienes, alkynes, halogen compounds, alcohols, ethers, aldehydes and ketones. They will also perform experiments in the laboratory.
Prerequisites: Either (a) CHEM 1210 or (b) CHEM 1110 (B)
Attributes: QUAN

CHEM 2420 4 Credits
Organic Chemistry II
Students will study the structure and reactions of aromatics, polycyclic aromatic and heteroaromatic compounds, and their enolates, and an introduction to the chemistry of fats, carbohydrates and proteins. They will also perform experiments in the laboratory. Note: This course is a continuation of CHEM 2320.
Prerequisites: CHEM 2320
Attributes: QUAN

CHEM 2310 (formerly CHEM 2310) 4 Credits
Physical Chemistry
Students will study chemical kinetics and thermodynamics with the appropriate mathematical rigour. They will also apply these physical chemistry principles in a lab setting. Students with credit for CHEM 2311 may not take this course for further credit.
Prerequisites: CHEM 1210 and (MATH 1220 or 1230)
Attributes: QUAN

CHEM 3320 4 Credits
Natural Products Chemistry
Students will study naturally occurring compounds, their structural types, structure elucidation, chemical synthesis, biosynthesis, and biological significance. They will also perform experiments in the laboratory to learn how to isolate, purify, identify and modify compounds of natural origin for pharmaceutical use and for other purposes.
Prerequisites: CHEM 2420

CHEM 4320 4 Credits
Drug Discovery, Design & Development
Students will learn and understand the principles and strategies for drug discovery, design and development. They will examine the chemical and biochemical principles and reactions vital to drug action and drug design using clinically important drugs as examples. Students will study drug activities against different types of targets, for example enzymes, receptors and oligonucleotides. They will learn drug absorption, distribution, metabolism and elimination process. Students will discover drug discovery processes involving hit discovery, lead optimization and drug synthesis.
Prerequisites: CHEM 2420

CHEM 4330 3 Credits
Modern Alchemy
Students will investigate aspects of nuclear and radiochemistry: radioactivity; atomic structure and stability; decay processes; interaction of radiation with matter; detection and measurement of radiation; applications of nuclear and radiochemistry.
Prerequisites: 60 credits including CHEM 1210, (PHYS 1102 or 1220) and (MATH 1220 or 1230)

CHEM 4399 3 Credits
Current Topics in Medicinal Chemistry
Students will discuss topics related to novel and contemporary areas of Medicinal Chemistry appearing in current literature, such as: aspects of drug research; identification and validation of emerging drug targets; drug design approaches; combinatorial methods; drug receptor interactions on the intermolecular level and structure-activity relationships.
Prerequisites: CHEM 4320 and 4610

CHEM 4610 4 Credits
Instrumental Analysis
Students will study current mainstream instrumental analysis techniques from both a theoretical and practical perspective. They will discuss the theory behind signal generation and measurement, the importance of optimization of all stages of an analysis, and the theory behind the instrumental techniques to be studied. Students will perform labs to illustrate and reinforce the concepts covered in the lecture.
Prerequisites: CHEM 2315