

# CHEMISTRY (CHEM)

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

**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.

*Co-requisites: NOTE: 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 Kwantlen degrees. NOTE: 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 Kwantlen degrees.*

*Attributes: QUAN*

*Transferable (refer to transfer guide)*

## **CHEM 1105** **4 Credits**

### **Introductory Chemistry**

Students will learn about: thermochemistry, freezing point depression, boiling point elevation, liquids and gases, solutions, acids and bases, ionic equilibria, chemical equilibria, and oxidation and reduction, after a quick review of the content of CHEQ 1094. They will also perform laboratory work.

*Prerequisites: One of: CHEM 1094, CHEQ 1094, Chemistry 11 (C+), Chemistry 12 (P), and , One of: MATH 1102, MATQ 1093, MATH 1093, MATQ 1099 (A), MATQ 0011 (C+), MATH 1117, ABEM 0011, ABEM 0082, MATP 1011, PSPM 1082, Principles of Mathematics 11 (C+), Pre-calculus 11 (C+)*

*Attributes: QUAN*

*Transferable (refer to transfer guide)*

## **CHEM 1110** **4 Credits**

### **The Structure of Matter**

Students will study the modern view of atomic structure, nuclear chemistry, theories of bonding and molecular structure, organic chemistry (properties and reactions of the major functional groups and isomerism) after a brief review of stoichiometry, gases and the treatment of experimental data. Students will also perform experiments in the laboratory.

*Prerequisites: (CHEM 1105 or [Chemistry 12 (C+)]) and (MATH 1102 or MATQ 1093 or MATH 1093 or MATH 1117 or MATH 1112 or [Pre-calculus 12] or [Principles of Mathematics 12 (P) and Mathematics Placement Test]) or [Principles of Mathematics 12])*  
*Co-requisites: MATH 1112 is strongly recommended MATH 1112 is strongly recommended*

*Attributes: QUAN*

*Transferable (refer to transfer guide)*

## **CHEM 1154** **4 Credits**

### **Chemistry for Engineering**

Students will learn about stoichiometry, gases, liquids, solids and solutions, equilibrium, acids and bases, thermodynamics, and chemical kinetics. They will also perform laboratory work.

**Note:** This course may not be used for credit for students in science, or as a pre-requisite for further chemistry courses. This course is designed for students transferring to an engineering program.

*Prerequisites: One of: CHEM 1105, Chemistry 12 (C+), and, One of: MATH 1112, Principles of Mathematics 12 (B), Pre-calculus 12 (B), Calculus 12(C)*

*Transferable (refer to transfer guide)*

## **CHEM 1210** **4 Credits**

### **Chemical Energetics and Dynamics**

Students will learn about topics including liquids, solids and solutions, a review of redox reactions, electrochemistry, the laws of thermodynamics, equilibrium, acids and bases, ionic equilibria, and chemical kinetics. They will also perform experiments in the laboratory.

*Prerequisites: CHEM 1110 and ([MATH 1112 or higher level] or [Principles of Mathematics 12 with a B] or [Pre-calculus 12 with a B])*

*Attributes: QUAN*

*Transferable (refer to transfer guide)*

## **CHEM 2311** **3 Credits**

### **Physical Chemistry for Life Sciences**

Students will study chemical kinetics, thermodynamics, and spectroscopy at a second year level without some of the mathematical rigor commonly associated with a second-year physical chemistry course.

*Prerequisites: CHEM 1210 and (MATH 1120 or 1130 or (1140 with a C+ or better))*

*Co-requisites: MATH 1220 or 1230 MATH 1220 or 1230*

*Attributes: QUAN*

*Transferable (refer to transfer guide)*

**CHEM 2315** **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*

*Transferable (refer to transfer guide)*

**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: CHEM 1210 (or CHEM 1110 with a B or better)*

*Attributes: QUAN*

*Transferable (refer to transfer guide)*

**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*

*Transferable (refer to transfer guide)*

**CHEM 3310 (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.

*Prerequisites: CHEM 1210 and (MATH 1220 or 1230)*

*Attributes: QUAN*

*Transferable (refer to transfer guide)*