

SAMPLE COURSE OUTLINE

Course Code, Number, and Title:

CHEM 1221: General Chemistry II

Course Format:

[Course format may vary by instructor. The typical course format would be:]

Lecture 3.0 h + Seminar 0.0 h + Lab. 3.0 h

Credits: 4.0

Transfer Credit: For information, visit bctransferguide.ca

Course Description, Prerequisites, Corequisites:

This course constitutes the second half of a first-year course in general college chemistry. Topics include: solutions, energetics, thermo-dynamics, chemical kinetics, structure and reactivity. Students may obtain credit for only one of CHEM 1220 OR CHEM 1221. These courses have the same learning outcomes but differ in their delivery mode. CHEM 1121 and CHEM 1221 will run with 100% online lectures and 100% online synchronous labs.

Note: Students intending to use this course for transfer to a university should be aware that this course is not intended to transfer to UBC Vancouver as CHEM 123.

Students will receive credit for only one of CHEM 1220 or 1221.

Prerequisite(s): A minimum "C-" grade in CHEM 1120 or 1121; and a minimum "C" grade in MATH 1152 or Precalculus 12, or MDT 75. (MATH 1153 is recommended as a co-requisite). Prerequisites are valid for three years.

Learning Outcomes:

Upon successful completion of this course, students will be able to...

Lab

- Follow lab procedures in order to perform chemical experiments safely and efficiently.
- Take appropriate measurements to generate data required to solve experimental problems.
- Analyze data and communicate in a written report.

Lecture

- Apply the methods of initial rates and integrated rate laws to determine a rate equation.
- Use rate equations to perform time-based calculations and assess plausibility of the mechanism.
- Describe reaction mechanisms and relate them to reaction energy diagrams and collision theory including catalysis.
- Describe and apply Arrhenius theory.
- Define/Describe/Differentiate energy, enthalpy, work and heat.

- Apply Hess's Law to calculate enthalpy change during chemical and physical processes.
- Describe the statistical basis of entropy.
- Predict the sign of ΔS for various chemical and physical processes.
- Describe both qualitatively and quantitatively the contribution of ΔH and ΔS to the spontaneity of processes.
- Relate equilibrium constants to Gibbs free Energy and temperature.
- Predict structure and geometry of organic molecules based on Lewis theory, VSEPR and valence bond theory.
- Recognize and identify structural isomers and different classes of stereoisomers.
- Illustrate different conformer projections of chains and ring structures, identify different forms of strain and predict relative energies of different conformers.
- Define electrophile, nucleophile, Lewis acid and a Lewis base.
- Draw reaction mechanisms for acid-base and nucleophilic substitution reactions
- Select between competing substitution reactions of simple organic halides based on their SN1 and SN2 mechanisms, and predict the structure and geometry of expected products.
- Distinguish between kinetic and thermodynamic control of a reaction.
- Apply knowledge of kinetic, thermodynamic and organic chemistry towards biologically and industrial relevant examples.

Instructor(s): TBA
Office: TBA
Office Hours: TBA

Phone: (604) 323-XXXX

Email: TBA

Textbook and Course Materials:

[Textbook selection may vary by instructor. An example of texts and course materials for this course might be:]

For textbook information, visit https://mycampusstore.langara.bc.ca/buy_courselisting.asp?selTerm=3|8

Note: This course may use an electronic (online) instructional resource that is located outside of Canada for mandatory graded class work. You may be required to enter personal information, such as your name and email address, to log in to this resource. This means that your personal information could be stored on servers located outside of Canada and may be accessed by U.S. authorities, subject to federal laws. Where possible, you may log in with an email pseudonym as long as you provide the pseudonym to me so I can identify you when reviewing your class work.

Assessments and Weighting:

Final Exam 25%

Other Assessments 75%

(An example of other assessments might be:)

Midterm Exam 40%

Lab Work 15%

Quizzes/Tests 10%

Assignments 10%

“This Sample Course Outline is for planning purposes only”.

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Grading System:

Specific grading schemes will be detailed in each course section outline.

Information unavailable, please consult Department for details.

Topics Covered:

[Topics covered may vary by instructor. An example of topics covered might be:]

- Unit 1: Chemical Kinetics (3 weeks)
- Unit 2: Thermodynamics (3 weeks)
- Unit 3: Organic Chemistry: Bonding and Structure (3 weeks)
- Unit 4: Organic Chemistry: Reactions (4 weeks)

As a student at Langara, you are responsible for familiarizing yourself and complying with the following policies:

College Policies:

[E1003 - Student Code of Conduct](#)

[F1004 - Code of Academic Conduct](#)

[E2008 - Academic Standing - Academic Probation and Academic Suspension](#)

[E2006 - Appeal of Final Grade](#)

[F1002 - Concerns about Instruction](#)

[E2011 - Withdrawal from Courses](#)

Departmental/Course Policies:

Information unavailable, please consult Department for details.