

Effective: Fall 2024

COURSE INFORMATION

Course Title: Principles of Chemistry II

Course Number: CHEM 102

Credits: 4

Total Weeks: 14 (Fall, Spring)
12 (Summer) **Total Hours:** 91

Course Level: First Year Second Year
 New Revised Course
 Replacement Course

Department: Science **Department Head:** S. Girdhar

Former Course Code(s) and Number(s) (if applicable): N/A

Pre-requisites (If there are no prerequisites, type NONE): CHEM 101 or equivalent

Co-requisite Statement (List if applicable or type NONE): NONE

Precluded Courses: N/A

COURSE DESCRIPTION

In this course students will continue studying the basic concepts of chemistry begun in CHEM 101. Topics include reaction kinetics and mechanisms; organic reaction mechanisms; equilibrium; acids, bases, and solubility; thermochemistry and thermodynamics; redox reactions and electrochemistry.

LEARNING OUTCOMES

Upon successful completion of the course, students will be able to:

- Demonstrate a firm grasp of the knowledge of chemistry, as specified in course syllabus and objectives.
- Identify the relationships between chemistry and other science disciplines, and the applications of chemistry in society. Identify the impact of chemistry on our life and the world around us.
- Solve chemistry problems using mathematical and computational tools.
- Understand and use the correct vocabulary necessary to communicate specific chemical information to other chemists and non-chemists.
- Speak, write, and listen critically.
- Demonstrate competency in the laboratory skills: knowledge of the appropriate equipment and techniques and follow the proper procedures and regulations for safe handling when using chemicals.
- Be able to understand the specific instructions given to carry out experiments, make quantitative and qualitative observations and collect the necessary data with the appropriate precision and accuracy, then in a report process the data and determine and assess the results.
- Understand the factors governing the kinetics and mechanisms of chemical reactions, both inorganic and organic, and be able to determine them experimentally.
- Comprehend and test the equilibria of various systems, both homo- and heterogeneous, as related to gases, acids, bases, buffers, and solubility.
- Relate the laws of thermodynamics to chemical and related processes.
- Understand the fundamentals of electrochemical reactions and their relationship to the laws of thermodynamics, and be able to test them experimentally by designing and taking measurements of electrochemical cells

INSTRUCTION AND GRADING

Instructional (Contact) Hours:

Type	Duration
Lecture	52
Seminars/Tutorials	
Laboratory	39
Field Experience	
Other (<i>specify</i>):	
Total	91

Grading System: Letter Grades Percentage Pass/Fail Satisfactory/Unsatisfactory Other
Specify passing grade: 50%

Evaluation Activities and Weighting (total must equal 100%)

Assignments: <i>Specify number of, variety, and nature of assignments:</i>	Lab Work: 25%	Participation: <i>Specify nature of participation:</i>	Project: % <i>Specify nature of project:</i>
Quizzes/Test: 15%	Midterm Exam: Midterm 1: 15% Midterm 2: 15%	Final Exam: 30%	Other: %

TEXT(S) AND RESOURCE MATERIALS

Provide a full reference for each text and/or resource material and include whether required/not required.

OpenStax College. (2021). Chemistry. <https://openstax.org/details/books/chemistry-2e>
 Organic Chemistry with a Biological Emphasis (Soderberg). (2021, March 16). University of Minnesota Morris. [https://chem.libretexts.org/Bookshelves/Organic_Chemistry/Book%3A_Organic_Chemistry_with_a_Biological_Emphasis_v2.0_\(Soderberg\)](https://chem.libretexts.org/Bookshelves/Organic_Chemistry/Book%3A_Organic_Chemistry_with_a_Biological_Emphasis_v2.0_(Soderberg))

COURSE TOPICS

List topics and sequence covered.

Week	Topic
Week 1	Chemical Kinetics
Week 2	Chemical Equilibrium
Week 3	Acids and Bases
Week 4	Midterm 1

Week 5	Acid-Base and Solubility Equilibria
Week 6	Thermochemistry
Week 7	Thermodynamics
Week 8	Spontaneity
Week 9	Midterm 2
Week 10	Redox Reactions
Week 11	Electrochemistry
Week 12	Stereochemistry
Week 13	Organic Reaction Mechanisms
Week 14	Final Exam

NOTES

1. Students are required to follow all College policies. Policies are available on the website at: [Coquitlam College Policies](#)
2. To find out how this course transfers, visit the BC Transfer Guide at: bctransferguide.ca

Last Reviewed: September 2024

Last Revised: September 2024