Chemistry (CHEM) 218

Chemical Principles II (Revision 10)

Status:	Replaced with new revision, see the **course listing** for the current revision
Delivery mode:	**Individualized study online** with a **Supervised Lab**. Students may be eligible for a **lab exemption**. This course is charged a **lab fee**. Delivered via Brightspace.
Credits:	3
Area of study:	Science

Prerequisites:	**CHEM 217**. Concurrent registration in CHEM 217 and 218 is not permitted. To avoid unnecessary delays, the course coordinator will normally grant permission for students to register in CHEM 218 as soon as the final examination in CHEM 217 has been written.
Precluded:	None
Challenge:	CHEM 218 is not available for challenge.
Faculty:	**Faculty of Science and Technology**

Overview

CHEM 218 is a continuation of **CHEM 217** . Topics covered include chemical kinetics, chemical equilibrium, acid–base and solubility equilibria, thermodynamics, electrochemistry, radioactivity and nuclear chemistry, and an introduction to organic chemistry. The experiments performed in the lab component of the course complement the material studied in the theoretical part of the course and provide students with the opportunity to use many of the skills developed in CHEM 217. The combination of CHEM 217 and CHEM 218 is equivalent to first-year university chemistry.

Learning outcomes

Upon successful completion of this course, you should be able to

- measure chemical reaction rates, formulate rate laws, and determine reaction mechanisms from kinetic data.
- discuss chemical equilibria, predict how reaction conditions can shift an equilibrium, and calculate equilibrium concentrations of reactants and products.
- describe acid–base and other aqueous equilibria in terms of molecular properties, and perform calculations on those equilibria.
- define and apply the concepts of entropy, enthalpy, and Gibbs free energy to chemical thermodynamics problems.
- identify electrochemical reactions and solve electrochemistry problems involving cell potential, reactant concentrations, and applied current.
- describe and balance nuclear reactions, calculate rates of radioactive decay, and describe aspects of nuclear fission and nuclear fusion.
- express the structures, basic properties, and chemical reactivity of organic compounds.
- perform qualitative and quantitative chemical experiments and record and interpret results.

Evaluation

To **receive credit** for CHEM 218, you must achieve an overall composite grade of at least **D (50 percent)** . You must also achieve at least 50 percent on each of the two examinations, an average

grade of at least 50 percent on the oral quizzes, and an average grade of at least 60 percent on the laboratory component.

The weighting of the composite grade is as follows:

Activity	Weight
Assignments 1–8 (2.5% each)	20%
Oral quizzes 1–4 (5% each)	20%
Laboratory component	20%
Midterm examination	15%
Final examination	25%
Total	**100%**

The **midterm and final examinations** for this course must be requested in advance and written under the supervision of an AU-approved exam invigilator. Invigilators include either ProctorU or an approved in-person invigilation centre that can accommodate online exams. Students are responsible for payment of any invigilation fees. Information on exam request deadlines, invigilators, and other exam-related questions, can be found at the **Exams and grades** section of the Calendar.

Materials

Digital course materials

Links to the following course materials will be made available in the course:

Tro, N. J., Fridgen, T. D., & Shaw, L. E. (2023). *Chemistry: A molecular approach* (4th Canadian Ed.) Pearson.

Platforms

This course also uses Mastering Chemistry.

Other Resources

You will also need to purchase an electronic calculator capable of handling logarithms and exponentials. **Remember:** Take your calculator with you whenever you write an examination.

Important links

- Academic advising
- Program planning
- Request assistance
- Support services at AU
- Chemistry Lab Resources

- **Chemistry Lab Exemptions**

Athabasca University reserves the right to amend course outlines occasionally and without notice. Courses offered by other delivery modes may vary from their individualized study counterparts.

Opened in Revision 10, September 10, 2025

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View **previous revision**