

CHEM 117 Syllabus 2026-2027

Welcome to CHEM 117! To begin, we acknowledge that Queen's is situated on traditional Anishinaabe and Haudenosaunee territory. We are grateful to be able to live, learn, and play on these lands.

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General Information

We are excited to have you join us this year. This course will explore the foundations of hands-on chemistry through laboratory experiments. We hope that you will enjoy your year with us and that the experience can kindle your enthusiasm for chemistry.

Course Details

Course: CHEM117 - General Chemistry Laboratory

Semester: Fall/Winter 2026-27

Credits: 1.5

Learning hours: 84

Modality: In-person on campus

Pre-requisites: Prerequisite CHEM 114/3.0. Exclusion CHEM 112/6.0.

Course Description

Laboratory course intended for students who have taken CHEM 113/3.0 and CHEM 114/3.0 online and wish to add a laboratory component (i.e., that of CHEM 112/6.0) that affords foundational experience in different types of chemistries (physical, analytical, etc.) through experiments in thermodynamics, neutralization, electrochemistry, equilibria, kinetics, and organic chemistry.

NOTE Laboratory Equipment (Lab Coat, Goggles, Blue Lab Book): estimated cost \$70.

Fall Course Topics

Week(s)	Activity
1	Lab Safety Training
2	Data Analysis
3	Beginner Lab Skills
4	Molar Mass Determination
5	Independent Review
6	Quantitative Analysis
7	Gas Laws
8	Beer's Law
9-10	Aspirin Synthesis
11	Calorimetry
12	Make-up Week for Fall Term

Winter Course Topics

Week(s)	Activity
1	Independent review
2	Enthalpy of Vaporization
3	Enthalpy of Neutralization
4-5	Acid Base Titrations
6-7	Iron(III) acac Synthesis and Analysis
8	Vitamin C Titration
9	Corrosion of Metals
10	Kinetics
11	Make-Up Week for Winter Term
12	Independent Review

Course Learning Outcomes

By the end of this course, students should be able to:

1. Analyze experimental data critically.
2. Do error analysis and reporting.
3. Better understand some of the first-year chemistry material.
4. Understand equipment principles and limitations.
5. Understand and use concepts of equilibrium systems including acid/base, solubility, oxidation/reduction and precipitation systems.
6. Determine and describe the kinetics of a system using different experimental procedures and relate the results to reaction mechanisms

Laboratory schedule

CHEM117 will join CHEM112 to complete the experiments. In CHEM112 Labs and tutorials are conducted consecutively during a 3-hour time slot. Some sections will start with 90 minutes of lab and then 90 minutes of tutorial, while others will do the opposite. Your lab section number and tutorial section number are the same. Schedules for 4 sections are shown in the sample table below. A complete table with all sections is posted on onQ.

Here is an Example Schedule:

Monday Afternoon, 2:30-5:30, Sections 005, 006, 007, 008
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TIME	Section 005	Section 006	Section 007	Section 008
2:30				
4:00				

Course communications

All course inquiries and questions should be posted in an onQ discussion forum or sent by e-mail to: chem112@queensu.ca. See further information about contacting the teaching team below. You may not receive a response if you send a course question to the wrong place.

Teaching Team

Course/Lab Coordinator

Instructor Name: **Dr. Alaina Boyd**

E-mail: a.boyd@queensu.ca

Phone: 613-533-6941

Please send all requests for academic consideration to the course coordinator at chem112@queensu.ca

Teaching Assistants (TAs)

Lab TAs are responsible for leading the CHEM112/117 laboratory experiments, for grading lab reports, and for your safety in the lab. They will be wearing distinctive red or blue lab coats. If you have questions about the lab content or procedures, please consult your lab TA.

Questions about the Course and Contacting the Teaching Team

Questions about Course Content: Throughout this course, you may come upon some general questions about the course and any assignments. There are three options for asking questions:

- 1) You are invited to post your question in the course Discussion Forum, which will benefit other students. Feel free to help answer your peers' questions on this forum. The teaching team will monitor this discussion forum and answer questions. Most questions are answered within 24 hours.
- 2) Contact your lab TA through the emails listed in OnQ, or better yet, ask them during lab.
- 3) Visit Dr. Boyd in her office! A link to book a meeting is available in onQ.

Questions about grades or other personal issues: Any other questions that you would prefer to share privately, please contact the course coordinator (chem112@queensu.ca)

Course Announcements

Throughout the course, we will routinely post course news in the Announcements section of the course homepage. Please configure your OnQ settings to send an alert to your cell phone or your favourite e-mail address. We encourage you to actively check the course OnQ main page for course announcements throughout the semester for reminders and additional course information or learning opportunities.

Inclusion

Land Acknowledgement

Let us acknowledge that Queen's University occupies traditional Anishinaabe and Haudenosaunee territory. To acknowledge this traditional territory is to recognize its longer history, one predating the establishment of the earliest European colonies. It is also to acknowledge this territory's significance for the Indigenous Peoples who lived, and continue to live, upon it and whose practices and spiritualities are tied to the land and continue to develop in relationship to the territory and its other inhabitants today. Indigenous communities in Kingston/Katarokwi continue to reflect the area's Anishinaabe and Haudenosaunee roots. We are grateful to be able to live, learn and play on these lands.

Equity, Diversity, and Inclusivity

Queen's University recognizes that the values of equity and diversity are vital to and in harmony with its educational mission and standards of excellence. It acknowledges that direct, indirect, and systemic discrimination exists within our institutional structures, policies, and practices and in our community. These take many forms and work to differentially advantage and disadvantage persons across social identities such as race, ethnicity, disability, gender identity, sexual orientation, faith, and socioeconomic status, among other examples. In this class I will work to promote an anti-discriminatory, anti-racist and accountable environment where everyone feels welcome. Every member of this class is asked to show respect for every other member.

Building a Classroom Community

University is a place to share, question, and challenge ideas. Each student brings a different set of lived experiences. You can help to create a safer, more respectful classroom community for learners by following these guidelines:

- Make a personal commitment to learn about, understand, and support your peers.
- Assume the best of others and expect the best of them.
- Recognize and value the experiences, abilities, and knowledge each person brings to the course.
- Acknowledge the impact of oppression on other people's lives and make sure your words and tone are respectful and inclusive.
- Encourage others to develop and share their ideas.
- Pay close attention to what your peers say/write before you respond. Think through and re-read what you have written before you post online or send your comments to others.

- Be open to having your ideas challenged and challenge others with the intent of facilitating growth.
- Look for opportunities to agree with one another, building on and intentionally referencing peers' thoughts and ideas; disagree with ideas without making personal attacks, demeaning, or embarrassing others.

Fostering Accessibility

All of us have a shared responsibility for fostering accessibility and promoting meaningful inclusion of those with disabilities. The [Accessibility Hub](#) at Queen's University's Human Rights & Equity Office offer a host of [tutorials](#) that provide us all with practical tips for:

- creating accessible documents, e.g., to submit to your teaching team or share with peers in peer feedback activities/in a presentation,
- emails, e.g., while communicating with group members or your teaching team, and
- meeting practices (e.g., in tutorials/labs/seminars or virtual meetings).

Name/Pronoun

If, for whatever reason, you wish to change how your name appears in onQ and/or on class lists, please follow these steps. You may also use this process to add your pronouns to the appearance of your name.

1. Log into SOLUS.
2. Click on Personal Information tab.
3. Click on the Names tab
4. Click on the Add New Name tab
5. Choose Preferred from the Name Type drop down menu
6. Enter the name you would like to appear in onQ and/or on class lists.
7. Click Save.

Please allow 24 to 48 hours for your name to be registered within the system. If you have further questions or concerns, please contact ITS at Queen's University.

Course Materials

Course Textbook

Openstax Chemistry 2e is the course textbook for CHEM 112. The textbook can be accessed for free online from this [link](#). This textbook will function as the primary resource for the course with references made to the textbook in lecture, and suggested practice problems for each lecture will be assigned from this textbook.

Laboratory Equipment

Proper personal protective equipment and lab materials are required for this course. This includes a lab coat, goggles, a lab notebook, and the lab manual. The estimated cost of all items is \$70 and can be purchased from Science Stores in Chernoff Hall.

Course Homework

You have **optional access** to the Knewton Alta website, used by CHEM112 students for homework assignments. Access to Knewton Alta can be purchased from the campus bookstore (located at 30 5th Field Company Ln) or the [online bookstore](#). The cost associated is \$67.95; if you have questions please contact the course coordinator.

Lab Assignments

Stemle will be used for laboratory pre-lab and post-lab assignments. Access can be purchased directly from [their website](#). The cost associated is \$90; if you have questions please contact the course coordinator.

Supplementary Textbooks

These textbooks cover first year general chemistry concepts and can be used to supplement your learning of the course content:

- First Year General Chemistry by Mombourquette. This textbook can be accessed for free online from this [link](#).
- Petrucci Herring Madura Bissonette, General Chemistry Principles and Modern Applications 11e, Pearson Toronto, Canada, 2016. This textbook is available on-loan at the campus library.

Technology Requirements

- **Web Browsers.** onQ works best with Chrome or Firefox. Mac users have reported problems using Safari and Queen's IT claims that Microsoft Edge may also cause problems.

- **Internet Speed.** *A wireless or wired Internet connection is required. A minimum download speed of 10 Mbps and up to 20 Mbps for multimedia is recommended. Click here for an [Internet speed test](#).*

Course Timeline

A detailed course timeline can be found in onQ. Please consult the university's [website of important dates](#) for information on session dates, statutory holidays, fall or winter breaks, etc.

Assessments

Labs: The labs portion of your grade comprises pre-lab tasks and lab reports. Your lab report will be due the week following completion of your experiment on the Stemple platform.

Late Policy

Lab reports will be marked zero for any portion of the assignment that is not submitted before the deadline.

Grading Scheme

Safety		10%
	Safety Lab	0.5%
	WHMIS Training	0.5%
Labs		90%
	Data Analysis	6%
	Beginner Lab Skills	6%
	Molar Mass Determination	6%
	Quantitative Analysis	6%
	Gas Laws	6%
	Beer's Law	6%
	Aspirin Synthesis	6%
	Calorimetry	6%
	Enthalpy of Vaporization	6%
	Enthalpy of Neutralization	6%
	Acid Base Titrations	6%
	Iron(III) acac Synthesis and Analysis	6%
	Vitamin C Titration	6%
	Corrosion of Metals	6%
	Kinetics	6%
Total		100%

<i>Queen's Official Grade Conversion Scale</i>	
Grade	Numerical Course Average (Range)
A+	90-100
A	85-89
A-	80-84
B+	77-79
B	73-76
B-	70-72
C+	67-69
C	63-66
C-	60-62
D+	57-59
D	53-56
D-	50-52
F	49 and below

Alignment with Course Learning Outcomes (CLOs)

Assessment	Alignment with CLOs	Weight
Lab Safety Training	CLO 3, 4	10%
Data Analysis	CLO 1, 2	6%
Beginner Lab Skills	CLO 4	6%
Molar Mass Determination	CLO 1, 2, 3, 4, 5	6%
Quantitative Analysis	CLO 3, 5	6%
Gas Laws	CLO 1, 2, 3, 4, 5	6%
Beer's Law	CLO 1, 2, 3, 4, 5	6%
Aspirin Synthesis	CLO 1, 3, 5	6%
Calorimetry	CLO 1, 2, 3, 4, 5	6%
Enthalpy of Vaporization	CLO 1, 2, 3, 4, 5	6%
Enthalpy of Neutralization	CLO 1, 2, 3, 4, 5	6%
Acid Base Titrations	CLO 1, 2, 3, 4, 5	6%
Iron(III) acac Synthesis and Analysis	CLO 1, 3, 5	6%
Vitamin C Titration	CLO 1, 2, 3, 4, 5	6%
Corrosion of Metals	CLO 1, 2, 3, 4, 5	6%
Kinetics	CLO 1, 2, 3, 4, 6	6%

Grading Method

All components of this course will receive numerical percentage marks. The final grade you receive for the course will be derived by converting your numerical course average to a letter grade according to [Queen's Official Grade Conversion Scale](#). Note that some consideration for missed assignments is given under Universal Design for Learning (UDL – see “Academic Consideration” section on Page 14).

Re-Grading Policy

If you believe that you were unfairly graded on a course assessment, you can request for the assessment to be re-graded. The re-grade request must be worth more than 1% of your final grade, otherwise it will not be entertained. Before submitting a re-grade request form, you must have a

discussion over email with the TA responsible for grading the evaluation within one week of receiving the grade.

If you are not satisfied with the discussion you had with the TA, you can submit a formal re-grade request through the [re-grade request form](#) within 3 weeks of receiving the original grade. The result of this re-grade will stand regardless of if the grade is higher or lower than the original grade for the assessment.

Informal Grade Review Policy

Informal grade review petitions must be made prior to grades being submitted for that term. To request an informal grade review, please email your primary instructor for the term (emails for instructors can be found on page **Error! Bookmark not defined.** of this syllabus). For information on informal grade review petitions, please see the [Queen's Arts and Science academic petitions & appeals page](#).

Lab and Tutorial Attendance

Missing a lab will result in a zero for that lab and failure of the course. If you are unable to complete a lab during your regularly scheduled period, you may make up any missed labs during lab make-up week at the end of the term. The overall lab mark will include UDL consideration (lowest mark each term is dropped, see "Academic Consideration" section on Page 14). While the lowest lab report mark from each term is dropped, submitting lab reports is a part of lab attendance. Failure to submit a lab report for an experiment will result in a zero for that lab and failure of the course.

Academic Accommodations

Queen's University is committed to working with students with disabilities to remove barriers to their academic goals. Queen's Student Accessibility Services (QSAS), students with disabilities, instructors, and faculty staff work together to provide and implement academic accommodations designed to allow students with disabilities equitable access to all course material (including in-class as well as exams). If you are a student currently experiencing barriers to your academics due to disability related reasons, and you would like to understand whether academic accommodations could support the removal of those barriers, please visit the [QSAS website](#) to learn more about academic accommodations or start the registration process with QSAS by clicking **Access Ventus** button at [Ventus | Accessibility Services | Queen's \(queensu.ca\)](#)

VENTUS is an online portal that connects students, instructors, Queen's Student Accessibility Services, the Exam's Office and other support services in the process to request, assess, and implement academic accommodations.

To learn more go to: <https://www.queensu.ca/ventus-support/students/visual-guide-ventus-students>

Academic Consideration for Students in Extenuating Circumstances

Queen's University is committed to providing academic consideration to students experiencing extenuating circumstances. For more information, please see the [Senate Policy on Academic Consideration for Students in Extenuating Circumstances](#).

This course uses Universal Design for Learning (UDL). Each term, the lowest report grade will be automatically dropped. As you are learning, if you do poorly on one assessment per term it will not negatively impact your final grade.

Each Faculty has developed a protocol to provide a consistent and equitable approach in dealing with requests for academic consideration for students facing extenuating circumstances. Arts and Science undergraduate students can find the Faculty of Arts and Science protocol and the [portal where a request can be submitted](#). Students in other Faculties and Schools who are enrolled in this course should refer to the protocol for their home Faculty.

If you need to request academic consideration for this course, you will be required to provide the name and email address of the instructor/coordinator. Please use the following information:

NAME: Alaina Boyd

EMAIL ADDRESS: chem112@queensu.ca

Students are encouraged to submit requests as soon as the need becomes apparent and to contact their Professors/Course Coordinators as soon as possible once Consideration has been granted. Any delay in contact may limit the Consideration options available.

Please note that requesting an academic consideration form from the FAS portal does not automatically grant you the consideration you may need. You still need to communicate directly with the Course coordinator with whom you can discuss what needs to be done.

Your Professor/Course Coordinator requests email/onQ/phone communication to 613-533-6941 or chem112@queensu.ca within 2 days of receiving verification of your Consideration request.

For more information on the Academic Consideration process, what is and is not an extenuating circumstance, and to submit an Academic Consideration request, [please visit the website](#).

Academic Integrity

Queen's students, faculty, administrators and staff all have responsibilities for upholding the [fundamental values of academic integrity](#): honesty, trust, fairness, respect, responsibility and courage. These values are central to the building, nurturing, and sustaining of an academic community in which all members of the community will thrive. Adherence to the values expressed through academic integrity forms a foundation for the "freedom of inquiry and exchange of ideas" essential to the intellectual life of the University (see the [Senate Report on Principles and Priorities](#)).

Students are responsible for familiarizing themselves with the regulations concerning academic integrity and for ensuring that their assignments and their behaviour conform to the principles of academic integrity. Information on academic integrity is available in the Arts and Science Calendar (see [Academic Regulation 1](#)), on the [Arts and Science website](#), and from the instructor of this course. Departures from academic integrity include plagiarism, use of unauthorized materials, facilitation, forgery, and falsification, and are antithetical to the development of an academic community at Queen's. Given the seriousness of these matters, actions which contravene the regulation on academic integrity carry sanctions that can range from a warning or the loss of grades on an assignment to the failure of a course to a requirement to withdraw from the university.

For Lab Reports: Although you are working with a partner, your lab report must be your own. Don't copy words and phrases directly from your partner's report. Both reports will get a zero if copying has happened. You can and should discuss the experimental results between you and your partner, but you must write your own individual lab report.

Copyright of Course Materials

Course materials created by the course instructors, including all slides, presentations, handouts, tests, exams, and other similar course materials, are the instructor's intellectual property. It is a departure from academic integrity to distribute, publicly post, sell, or otherwise disseminate an instructor's course materials, including note sharing sites, without the instructor's express written consent. A student who engages in such conduct may be subject to penalty for a departure from academic integrity and may also face adverse legal consequences for infringement of intellectual property rights.

Netiquette / Discussion Guidelines

University is a place to share, question, and challenge ideas. Each student brings a different set of lived experiences. You can help to create a safe, respectful place for learners by promoting the following guidelines:

- Make a personal commitment to learn about, understand, and support your peers.
- Assume the best of others and expect the best of them.

- Acknowledge the impact of oppression on other people's lives and make sure your writing is respectful and inclusive.
- Recognize and value the experiences, abilities, and knowledge each person brings.
- Pay close attention to what your peers write before you respond. Think through and re-read your writings before you post or send them to others.
- It's alright to disagree with ideas, but do not make personal attacks.
- Be open to being challenged or confronted on your ideas and challenge others with the intent of facilitating growth. Do not demean or embarrass others. Encourage others to develop and share their ideas.

Generative AI Writing Tools

Students must submit their own work and cite the work that is not theirs. Generative AI writing tools such as ChatGPT are welcome to be used as a starting point, provided you cite the material that they generate and that you do not submit verbatim text from any of these tools for course assessments. Any other use constitutes a departure from academic integrity.

For best practices when using generative AI in writing please see the linked [article](#).

Students Studying or Travelling Abroad

CHEM 117 has mandatory in-person labs. You cannot miss these and expect to pass the course. We strongly recommend that you confirm Internet availability in your host country before departure if you plan to travel. In the past, students in other countries have been blocked from accessing certain websites relevant to their courses and onQ. It is the responsibility of all students to book travel around course work, as we cannot change the format or timing on assessments or assignments because of travel plans.

Privacy Statement

Knewton Alta

This course uses Wiley's Knewton Alta for homework assignments. Your use of this website will be under Wiley's [privacy policy](#) and [terms of service](#).

Stemble

This course uses Stemble for lab assignments. Your use of this website will be under Stemble's [privacy policy](#) and [terms of service](#).

Turnitin

This course makes use of Turnitin, a third-party application that helps maintain standards of excellence in academic integrity. Normally, students will be required to submit their course assignments through onQ to Turnitin. In doing so, students' work will be included as source documents in the Turnitin reference database, where they will be used solely for the purpose of detecting plagiarized text in this course. Data from submissions is also collected and analyzed by Turnitin for detecting Artificial Intelligence [\(AI\)-generated text](#). These results are not reported to your instructor at this time but could be in the future.

Turnitin is a suite of tools that provide instructors with information about the authenticity of submitted work and facilitates the process of grading. The similarity report generated after an assignment file is submitted produces a similarity score for each assignment. A similarity score is the percentage of writing that is similar to content found on the internet or the Turnitin extensive database of content. Turnitin does not determine if an instance of plagiarism has occurred. Instead, it gives instructors the information they need to determine the authenticity of work as a part of a larger process.

Please read Turnitin's [Privacy Policy](#), [Acceptable Use Policy](#) and [End-User License Agreement](#), which govern users' relationship with Turnitin. Also, please note that Turnitin uses cookies and other tracking technologies; however, in its service contract with Queen's Turnitin has agreed that neither Turnitin nor its third-party partners will use data collected through cookies or other tracking technologies for marketing or advertising purposes.

For further information about how you can exercise control over cookies, see [Turnitin's Privacy Policy](#).

Turnitin may provide other services that are not connected to the purpose for which Queen's University has engaged Turnitin. Your independent use of Turnitin's other services is subject solely to Turnitin's Terms of Service and Privacy Policy, and Queen's University has no liability for any independent interaction you choose to have with Turnitin.

Portions of this document have been adapted, with permission, from the University of Toronto Centre for Teaching Support and Innovation tip sheet "[Turnitin: An Electronic Resource to Deter Plagiarism](#)".

Notice of Recording

In the event of that course delivery (lectures, office hours, tutorials) are hosted online, these sessions may be recorded and posted for later review, including by students who could not attend. Steps have been taken by the University to configure these platforms in a secure manner. Online classes will be recorded with video and audio (and, in some cases, transcription) and will be made available to students in the course for the duration of the term. The recordings may capture your name, image or voice through the video and audio recordings. By attending these live classes, you are consenting to the collection of this information for the purposes of administering the class and associated coursework. If you are concerned about the collection of your name and other personal information in the class, please contact the course instructor to identify possible alternatives.

To learn more about how your personal information is collected, used and disclosed by Queen's University, please see the [Notice of Collection, Use and Disclosure of Personal Information](#).