

Chem 1027A Course Outline

Course and Instructor Information

Chem 1027A (Fall 2023–24)
Chemistry: Everywhere and Everything

Prerequisites and Antirequisites

Chem 1027A does not have any prerequisites. The course is intended for students who have not taken Grade 11 or 12 Chemistry, and who are not registered in the Faculty of Science. Please note that Chem 1027A is not equivalent to Grade 12 Chemistry and cannot be used to fulfill prerequisite requirements for courses that require Grade 12 Chemistry.

Antirequisites: Chemistry 1301A/B, 1302A/B.

Section	Time	Room	Instructor	Office	Email
001	MWF 12:30 – 1:20 pm In-person	NCB-295	Prof. Brian Pagenkopf	BGS 2020	bpagenko@uwo.ca

The instructor is available immediately after lecture to answer questions, time permitting. Office hours will be available by appointment.

Email Policy

- Use your **@uwo.ca** email address and specify **1027A** in the subject line
- In all emails you must **include your Western ID number**
- *Questions regarding lecture material and course content should be posted on OWL Forums*
- Questions that can be answered from the course outline will not be replied to
- Effort will be made to return emails within 3-5 business days. Responses may be delayed depending on the time of the semester (i.e. during the start of the semester, near the midterm, and towards the end of the semester).

Course Website

All course materials, news and course updates will be posted on Western's learning management system, OWL (<http://owl.uwo.ca>). This is the primary method by which information will be disseminated to all students in the class, so you are responsible for checking OWL on a frequent basis. OWL will be used for the following:

- Course Outline
- Announcements
- Lecture Notes
- Accessing Grades
- Downloading and submitting Assignments

If you need technical assistance with OWL, seek support on the OWL Help page. Alternatively, contact the Western Technology Services Helpdesk by phone at 519-661-3800.

Course Materials

There is no required textbook for the course. In addition to the lecture notes, any required resource will be posted to the OWL site for your reference.

A simple calculator may be used for midterms and final exam, but no smart phones.

Crib Sheet

A crib sheet is allowed on the midterms and final exam. Rules for the crib sheet:

- Must be entirely *handwritten*, no computerized graphics or text
- For each midterm one 8.5 x 11 inch piece of paper written *only on one side*
- For the final exam both sides of the paper may be used

Crib sheets will be *inspected* during the midterms and final exam and if found non-compliant will be *confiscated*.

Class Topics

The lecture component will introduce students to the fundamentals of chemistry and explore various relevant topics to make connections to the chemical world around us. The tentative topics below will be explored and may change slightly based on timing of material covered each week.

1 The Chemical Perspective

Atomic scale, measurements, scientific notation, SI-units, unit conversions, scientific review

2 Matter: Atoms and Molecules

The periodic table, groups, elements, atomic structure, isotopes, mass spectroscopy, hydrocarbons, line drawings, allotropes, supercritical fluids

3 Matter and Energy

Changes in physical and chemical properties, states of energy, laws of conservation, balanced chemical equations

4 Organic Molecules

What organic means, carbon sources, combustion reactions, isomers, uses of petroleum

5 Plastics

Plastic utility, synthesis, composition, properties, recycling and disposal

6 Bioorganic Molecules

Hydrogen bonding, proteins, lipids (triglycerides, phospholipids, terpenes, steroids), detergents, carbohydrates, nucleic acids, COVID-19 vaccine

7 Electromagnetic Energy

Electromagnetic radiation, quantum mechanics, IR spectroscopy, UV-visible spectroscopy, NMR spectroscopy, x-ray crystallography, chromophores, Jablonski diagrams, greenhouse gasses and global warming

8 Chemistry and Pharmaceuticals

Drug development, history of sulfanilamide, the FDA, and clinical trials

Learning Outcomes

The course has an emphasis on introducing major areas of chemistry, analytical tools deployed in science, and the development of skills such as critical thinking, problem solving, analysis, and quantitative reasoning; these “professional skills” are essential to success in not just chemistry but also in other courses and in many occupations. Any student receiving credit for Chem 1027A will be expected to demonstrate competence in their ability to:

Course-Specific Expectations

Describe the importance of chemistry in everyday life and the interdisciplinary nature of chemistry.

Develop an appreciation for the complexity of chemistry and biological chemistry.

Use basic chemical terminology to describe chemical systems and phenomena.

Use critical thinking skills to explain, make connections between, and apply chemical principles, laws, and theories.

Examine, integrate, and critically assess provided or collected information relevant to the field of chemistry.

Recognize some of the modern ethical issues in chemistry and in science.

Soft-Skill Expectations

Work independently.

Obtain, evaluate, and integrate information from various sources, and determine its relevance.

Prioritize tasks and manage the use of time.

Communicate thoughts and ideas verbally and in writing.

Recognize when to seek assistance.

Develop respect for, and comply with, regulations and policies.

Learn to accept responsibility for decisions, actions, and non-actions.

Key Dates

Sept 7	Classes begin
Sept 13	Reflection 1
Sept 29	No Class. National Day for Truth and Reconciliation (observed at Western)
Oct 6	Assignment 1
Oct 9	No Class. Thanksgiving
Oct 13	Midterm 1
Oct 27	Assignment 2
Oct 30 – Nov 5	No Class. Reading Week
Nov 10	Midterm 2
Nov 17	Assignment 3
Dec 1	Assignment 4, Reflection 2 becomes available on OWL
Dec 8	Reflection 2. Last day of class
Dec 10 – 22	Examination Period (schedule TBA by Registrar)

Contingency Plan

Although the intent is for this course to be delivered in person, should any university-declared emergency require some or all of the course to be delivered online, either synchronously or asynchronously, the course will adapt accordingly. The grading scheme will not change. Any assessments affected will be conducted online as determined by the course instructor.

Evaluation

Your grade out of 100 will be calculated as follows:

Component	Notes	Value
Reflection 1	Due September 13, 2023	3
Assignment 1	Due October 6, 2023	7
Midterm 1	October 13, 2023	16
Assignment 2	Due October 27, 2023	7
Midterm 2	November 10, 2023	16
Assignment 3	Due November 17, 2023	4
Assignment 4	Due December 1, 2023	5
Reflection 2	Due December 8, 2023	3
Final Exam (cumulative)	Date set by Registrar	39
		100

Note that *Reflection 2* will become visible on OWL on December 1, 2023.

Uploading PDF's and Scanning. All documents uploaded to OWL must be in pdf format. Documents that can not be generated as a pdf (such as something drawn by hand) must be scanned. Photos will

not be accepted. If you don't have a scanner, then use the document scanning feature in a smartphone app such OneDrive or Dropbox. OneDrive is free from the University as part of your Office 365 suite.

Late submissions: *Assignments and reflections* will not be accepted after the due date (see below).

Midterms and Final Exam

The midterm tests will take place in-class on Oct 7, 2022 and Nov 9, 2022. Students will have 45 *minutes* to complete the test. The midterm exam is a closed-book assessment except for the allowed crib sheet described above and a simple calculator. The exam may consist of any of the following types of questions: multiple choice, true or false, matching and/or short answer questions. The weight of a missed midterm with academic accommodation will be added to the final exam.

The final exam is cumulative and will take place during the scheduled final examination period from December 10th - 22nd, 2023. You will have 3 hours to complete the final exam. You may use a simple calculator and the crib sheet described above. The exact date, time and location will be posted by the registrar.

Use of Electronic Devices

Only basic scientific calculators are permitted on tests and exams. All other electronic devices (cell phones, laptops, tablets, cameras, etc.) are prohibited. Students found in possession of prohibited devices will receive a mark of ZERO for the entire test or exam.

Conditions Required to Pass the Course

Students must receive a passing grade of 50% or higher on the final exam and an overall grade of 50% or higher. Students who fail to take the final exam will receive an F (40%) even if the calculated score is higher.

Absences

If you miss ANY component of the evaluation, regardless of its weight, due to illness or other serious circumstances and wish to be excused, you must provide valid medical or supporting documentation to the Academic Counselling Office of your Faculty of Registration as soon as possible.

For further information, please consult the University's medical illness policy at:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration.pdf

The Student Medical Certificate is available at:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf

Students should note that individual *instructors are not permitted to receive documentation directly from a student*, whether in support of an application for consideration on medical grounds, or for other

reasons. All documentation required for absences must be submitted to the Academic Counselling unit or Dean's Office of your home faculty or affiliated college.

Assessments worth less than 10% of the overall course grade:

With academic accommodation a missed *assignment* and *reflection* will be reweighed over the average of the other *assignments* or the other *reflection*. Without accommodation missed *assignments* and *reflections* will receive a grade of zero.

Assessments worth 10% or more of the overall course grade:

Missed midterm exams will be weighted to the final exam with academic accommodation. Without accommodation a missed midterm will receive a grade of zero.

Missed Final Exam

If you miss the Final Exam, please contact the Academic Counselling office of your Faculty of Registration as soon as you are able to do so. They will assess your eligibility to write the Special Examination (the name given by the University to a makeup Final Exam).

You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation" (e.g., more than 2 exams in 23-hour period, more than 3 exams in a 47-hour period).

The tentative date for the SPC exam is January 11, 2024.

If a student fails to write a scheduled Special Examination, the date of the next Special Examination (if granted) normally will be the scheduled date for the final exam the next time this course is offered. The maximum course load for that term will be reduced by the credit of the course(s) for which the final examination has been deferred. See the Academic Calendar for details (under [Special Examinations](#)).

Accommodation and Accessibility

Religious Accommodation

When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request accommodation for their absence in writing at least two weeks prior to the holiday to the course instructor and/or the Academic Counselling office of their Faculty of Registration. Please consult University's list of recognized religious holidays (updated annually) at

<https://multiculturalcalendar.com/ecal/index.php?s=c-univwo>.

Accommodation Policies

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and

cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf.

Academic Policies

The website for Registrarial Services is <http://www.registrar.uwo.ca>.

In accordance with policy,

https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf,

the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at their official university address is attended to in a timely manner.

The only calculator that is permitted on tests and exams is a non-programmable scientific calculator. No other electronic devices (phones, iPods, etc.) may be in your possession during tests and exams, even for timekeeping purposes. They may not be at your test/exam desk or in your pocket.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>).

Computer-marked multiple-choice tests and exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

Support Services

Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on adding/dropping courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: <https://www.uwo.ca/sci/counselling/>.

Students who are in emotional/mental distress should refer to Mental Health@Western (<https://uwo.ca/health/>) for a complete list of options about how to obtain help.

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have

experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at

https://www.uwo.ca/health/student_support/survivor_support/get-help.html.

To connect with a case manager or set up an appointment, please contact support@uwo.ca.

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Accessible Education at

http://academicsupport.uwo.ca/accessible_education/index.html

if you have any questions regarding accommodations.

Learning-skills counsellors at the Student Development Centre (<https://learning.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Western University is committed to a thriving campus as we deliver our courses in the mixed model of both virtual and face-to-face formats. We encourage you to check out the Digital Student Experience website to manage your academics and well-being: <https://www.uwo.ca/se/digital/>.

Additional student-run support services are offered by the USC, <https://westernusc.ca/services/>.