

# Chem 2211A (Fall 2021–22)

## Inorganic Elements in Life

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### *Prerequisite Requirements*

Unless you have either the prerequisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

The prerequisite for this course is Chemistry 1301A plus either Chemistry 1302A/B or Integrated Science 1001X. Chemistry 2271A is an antirequisite.

### *Course Website*

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.

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 Components*

Chemistry 2211A has four components: lectures, posters, a midterm test, and a final exam. All components are in-person unless public-health measures require us to pivot online.

The lecture component will introduce students to the fundamental concepts of bioinorganic chemistry, with an emphasis on the roles of metals in the biological world. Lecture attendance is mandatory and attendance may be taken.

The poster component will allow students, in groups of two or three, to research and then present a scientific poster on a topic chosen from a list provided by the course instructor. Each group will be assessed through "interviews" during the last two weeks of the term. Students will also visit, and learn from, other students' posters during those two weeks. This component will help you learn to access complex data and describe it in writing on your poster and orally during the interview. These are important skills that can be transferred to your future career! Details will be provided later.

The course has several broad learning outcomes. After taking the course, you will be able to:

- Assess the importance of metals in nature.
- Analyze news reports and other articles about the roles of metals in life.
- Explain the functions of selected metals in biological processes in systems.
- Explain the mechanism of toxicity of selected metals.
- Describe the role of metals in medical treatments.

## *Class Information*

Section	Time	Room	Instructor	Office	Email
001	Tue 9:30–10:20 Thu 9:30–11:20	CHB 9 CHB 9	Felix Lee	MSA 1202	flee32@uwo.ca

Some important dates:

- Early October: Poster topics and teams will be posted.
- Friday, October 15: Last day for your team to specify preferred poster topics.
- Tuesday, October 19 during class: Teams and topics will be finalized.
- Thursday, October 28 during class: Midterm Test
- Thursday, November 11: no class
- Saturday, November 13: Last day to choose your team's poster assessment date and time. A date and time will be assigned if your team does not make a choice.
- Friday, November 29: Posters must be put up by this date (location to be announced)
- Between Thursday, November 25 and Friday, December 3: 30-min poster assessment

## *Course Materials*

No textbook is required for this course. However, students are expected to have a working knowledge of many concepts from first-year chemistry, so the materials from first-year chemistry will be a useful reference. Important topics from first-year chemistry include, but are not limited to, atomic structure, orbital shapes, electronic configuration, and coordination numbers.

Some students may find *Bioinorganic Chemistry: Inorganic elements in the chemistry of life*, 2<sup>nd</sup> edition, by Kaim, Schwederski, and Klein to be an informative reference. It is in the Taylor Library, stack 5, call number QU130.K13 2013.

Note that content for tests and exams will be based on the course notes, what is on the OWL site, the posters, and what is discussed in class, and **not** what is in the textbook.

## *Class Topics*

<b>Topic</b>	<b>Description</b>
A	Introduction to Bioinorganic Chemistry
B	Essential Inorganic Chemistry: orbitals, electronic configurations, HSAB theory, ligands, coordination complexes, equilibrium/stability constants
C	Essential Biochemistry: amino acids and their acid-base properties, protein structure, cells, common biological ligands
D	Metals in the Environment: origins, bioavailability, speciation, toxic metals
E	Oxygen Transport: iron, copper
F	Photosynthesis: magnesium
G	Catalysis: magnesium, zinc, cobalt, iron
H	Toxicity of Selected Elements
I	Introduction to Metals in Medicine

## *Evaluation*

### Components

Tests and exams are necessary to assess your mastery of core concepts. Listed next to the respective components are their maximum contributions toward the course grade.

<b>Component</b>	<b>Notes</b>	<b>Normal Value</b>	<b>Missed Midterm</b>
Midterm Test	Thursday, Oct. 28, 9:30–11:20 AM (in-class)	35	--
Poster	Weighted average of individual and group marks	25	35
Final Exam	Cumulative, scheduled by the Registrar, 3 hours	40	65

## Requirements for Passing Chem 2211A

To obtain credit for the course, all four requirements below must be met:

1. Obtain a minimum of 50% (12.5 out of 25 or, in the case of a missed Midterm Test, 17.5 out of 35) on the Poster component.
2. Obtain a minimum *weighted average* of 50% on the Midterm Test and the Final Exam. That is, the Midterm Test mark out of 35, plus the Final Exam mark out of 40, must be greater than or equal to 37.5 out of 75. In the case of a missed Midterm Test, a minimum of 50% (32.5 out of 65) on the Final Exam must be obtained.
3. Obtain a minimum of 50 out of 100 on the overall course grade. Students who meet this requirement, but fail to meet one or more of the above requirements, will receive a course grade no greater than 40 out of 100.

None of the components will be “dropped” and it is not possible to have the components reweighted unless they were legitimately missed.

## *Academic Policies and Legalities*

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](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 his/her 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. Any student found in possession of these prohibited devices will receive a mark of zero on the test or exam.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at this website: [http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/scholastic\\_discipline\\_undergrad.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf)

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

In the event of a COVID-19 resurgence during the course that necessitates the course delivery moving away from face-to-face interaction, all remaining course content will be delivered entirely online synchronously or asynchronously. Details will be provided as needed. The grading scheme will **not** change. Any remaining assessments will also be conducted online as determined by the course instructor.

The Midterm Test and Final Exam are in-person assessments. In the event that one or more of these assessments need to be conducted online due to COVID-19, they may be conducted using a remote proctoring service. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide **personal information** (including some biometric data) and the session will be **recorded**. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring website at: <https://remoteproctoring.uwo.ca>.

## *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/>.

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 519-661-2147 if you have questions regarding accommodation.

The university's policy on Accommodation for Students with Disabilities can be found here: [https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/Academic%20Accommodation\\_disabilities.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic%20Accommodation_disabilities.pdf)

The university's policy on Accommodation for Religious Holidays can be found here: [http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/accommodation\\_religious.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf)

Learning-skills professionals at Learning Development & Success (<https://www.uwo.ca/sdc/learning>) 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.

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

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

# Student Absences

Students who experience an extenuating circumstance (such as illness or injury) sufficiently significant to temporarily render them unable to meet academic requirements may submit a request for academic consideration through the following routes:

- Submitting a Self-Reported Absence (SRA) form provided that the conditions for submission are met. To be eligible for a Self-Reported Absence:
  - An absence must be no more than 48 hours
  - The assessment must be worth no more than 30% of the course grade
  - No more than two SRAs may be submitted during the Fall/Winter term
- For medical absences, submitting a Student Medical Certificate (SMC) signed by a licensed medical or mental health practitioner to the Academic Counselling office of their Faculty of Registration.
- Submitting appropriate documentation for non-medical absences to the Academic Counselling office in their Faculty of Registration.

Students should also 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 that are not covered by the Self-Reported Absence Policy must be submitted to the Academic Counselling Office of your home faculty.**

For more information, please consult Western's policy on academic consideration for absences:  
[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/accommodation\\_illness.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_illness.pdf)

For the Student Medical Certificate (SMC), please see:  
[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/medicalform.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf)

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>.

## Missed Midterm Test or Final Exam

If you have received academic consideration for the Midterm Test, the weight of the Midterm Test will be shifted to the Final Exam.

If you are unable to write the Final Exam, contact your faculty's Academic Counselling Office as soon as possible. They will assess your eligibility to write the Special Exam (the name given by the university to a make-up Final Exam) in January of 2022.

You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation" (see [https://registrar.uwo.ca/academics/examinations/exam\\_conflicts.html](https://registrar.uwo.ca/academics/examinations/exam_conflicts.html)).