

CHEM 3400 Inorganic Chemistry: Reactivity and Properties

Department of Chemistry, Faculty of Science, University of Manitoba

General Information

Class time: Tuesday/Thursday 10:00-11:15 (3 credit hours)
Location: *online; students are expected to be present during scheduled class times*
First class: 10 September 2020
Last class: 10 December 2020

Instructor

Prof. Scott Kroeker
458 Parker Building
<http://www.sci.umanitoba.ca/chemistry/profiles/scottkroeker>
Office hours by appointment

Laboratory Main Teaching Assistant

Mr. Arun Krishnamurthy
455 Parker

Course Website

universityofmanitoba.desire2learn.com

Textbook (required)

Inorganic Chemistry (7th Ed.), Weller, Overton, Rourke, Armstrong: Oxford University Press, Oxford, U.K. (2018)

Evaluation

Evaluation will be based on the following components:

- assignments: 2 x 15% = 30%
- midterm exam: 15%
- laboratory: 20%
- final exam: 35%

Assignments will be distributed on October 8 and November 24 and will be due one week later. Late assignments will be accepted at a penalty of 10% per day.

A 75-minute midterm exam will be scheduled for 29 October 2020 during class time.

The laboratory is an essential component of the course. A minimum mark of 60% must be obtained to receive a passing grade in this course. Further details about delivery of the laboratory will be provided.

A three-hour final examination to be held during the December examination period will cover all aspects of the course, including material from lectures, assignments, textbook readings and laboratory. It is your responsibility to be available for any examination scheduled between 12-23 December 2020, inclusive. Final examination deferrals must be processed by the Faculty of Science office.

Should you miss any evaluative component due to illness, contact the instructor within 48 hours to arrange appropriate accommodations, which may include alternate assignments, oral examinations or transferring the weight of the missed component to the final exam.

Feedback prior to deadline for voluntary withdrawal (23 November 2020) will consist of a mid-term exam and one assignment.

Course Technological Requirements

Students enrolled in this course must ensure they satisfy the following minimum technological requirements:

- A computing device where one can create and edit documents
- An internet connection capable of streaming videos and downloading software
- Access to a web-cam and microphone

Laboratory Information

Times: Tuesday 14:30-17:25
Location: 442/438 Parker Building
First lab: 15 September 2020
Last lab: 8 December 2020

Scott.Kroeker@umanitoba.ca
204-474-9335

krishna6@myumanitoba.ca

Professional Conduct

We recognize that these are unusual circumstances, and that there are some adjustments needed when working virtually. At the same time, we do want to remind students that University policies, such as the Respectful Work and Learning Environment policy, still apply, as do basic expectations around how students will engage with each other, and with the University. This means that when participating in classes, online meetings, etc., students are expected to behave professionally, and follow the same basic norms as they would in person, such as being clothed, not being impaired, and participating respectfully. Essentially, if you wouldn't do it in an in-person class, don't do it in a virtual setting.

Grading Scheme

95-100%	A+	75-79%	C+
90-94%	A	70-74%	C
85-89%	B+	60-69%	D
80-84%	B	0-59%	F

Academic Integrity

The University of Manitoba takes academic integrity seriously. There are many supports available to assist you in completing your studies with integrity. Please see the following webpages for resources and more information:

<https://youtu.be/Ok-lilm4SeE>

<https://www.sci.umanitoba.ca/undergraduate-students/academic-resources/academic-integrity-2/>

<http://umanitoba.ca/academicintegrity/>

Student Accessibility

Students with disabilities should contact Student Accessibility Services to facilitate the implementation of accommodations. Please contact me if you wish to discuss their recommended accommodations.

Course Content

Prerequisites: Course material from CHEM 2400 is a prerequisite for CHEM 3400.

Overview: This course builds on the material presented in *Inorganic Chemistry: Structure and Applications* with an emphasis on *properties* and *reactivity*. Focusing primarily on coordination compounds involving transition metals, fundamentals such as molecular bonding, electronic spectroscopy and ligand substitution reactions are presented. Standard examples will be augmented by inorganic compounds and materials of interest in biochemistry, materials science and catalysis. The lab component involves the synthesis and characterization of structure and properties in inorganic systems, and has been designed to cultivate scientific writing skills.

General topical outline:

- Molecular symmetry
- Ligand field theory
- Electronic spectroscopy
- Ligand substitution mechanisms
- Electron transfer reactions
- Characterization methods