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: 319 Allen Building
First class: 5 September 2019
Last class: 5 December 2019

Laboratory Information
Times: Tuesday 14:30-17:25
Location: 442 Parker Building
First lab: 10 September 2019
Last lab: 3 December 2019

Instructor
Prof. Scott Kroeker
458 Parker Building
http://www.sci.umanitoba.ca/chemistry/profiles/scottkroeker
Office hours by appointment
Scott.Kroeker@umanitoba.ca
204-474-9335

Laboratory Main Teaching Assistant
Mr. Arun Krishnamurthy
krishna6@myumanitoba.ca
455 Parker

Course Website
universityofmanitoba.desire2learn.com

Textbook (required)

Evaluation
Evaluation will be based on the following components:
- assignments: 2 x 10% = 20%
- midterm exam: 15%
- laboratory: 25%
- final exam: 40%

Assignments will be distributed on October 3 and November 14 and will be due one week later. There will be no make-up assignments. Late assignments will not be accepted for marking without prior permission from instructor; such permission may be granted at the discretion of the instructor at a penalty of 10% per day. Extensions must be arranged well in advance of the due date (e.g., 72 hours).

A two-hour midterm exam will be scheduled for October 22 during the lab period, location TBA. There will be no opportunity to rewrite a missed mid-term test. Upon approval of a written excuse, the marks from a missed midterm exam will be added to the final exam, making it worth 55%.

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. Note that lab exemptions will be granted for one year only.

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. The time and location will be set by the Student Records office. It is your responsibility to be available for any examination scheduled between 9-20 December 2019, inclusive. Final examination deferrals must be processed by the Faculty of Science office.

Feedback prior to deadline for voluntary withdrawal (18 November 2019) will consist of a mid-term exam and one assignment.

Grading Scheme

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<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A+</td>
<td>95-100%</td>
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<tr>
<td>A</td>
<td>90-94%</td>
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<td>B+</td>
<td>85-89%</td>
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<td>B</td>
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<td>C+</td>
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<td>C</td>
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<td>D</td>
<td>60-69%</td>
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<td>F</td>
<td>0-59%</td>
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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://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