Inorganic Elements in Life

Instructor Martin Stillman

Email: martin.stillman@uwo.ca  ChB 064

Course Website .instruct.uwo.ca/chemistry/2211a  (no www - lowercase “a”)

The missing of critical information due to failure to check the website or read your @uwo.ca email cannot be used as a basis for appeal. NOTE: This is not OWL!

Revision: 2018 AUG 29 18fg

Also please follow "like" www.facebook.com/chemistryatwestern

Course Materials

See the 1st INTRO unit on the web site for others that are in the library. Best is the new 2nd edition of Kaim, Schwederski & Klein (KS&K)- “Bioinorganic Chemistry: Inorganic elements in the chemistry of life” in the book store ISSN: 1939-5175

Course Components

Chemistry 2211a has four components: lecture, poster, a midterm exam and a final exam.

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. Missing important announcements given at lectures cannot be used as the basis for an appeal.

After taking this course you will be able to assess the importance of metal ions in Nature. You will be able to assess news reports and your own reading about the importance of metals in your own life and the lives of your family members and friends. You will be able to address the value of essential metals in your diet, toxic metals to avoid, and metals that play a role therapeutically in drugs you might take in your future.

Overall you will be able to begin to understand the role metals play in a healthy life of all organisms.

The poster component will allow students, in groups of two, 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. Poster guidelines will be provided at a later date. You will learn to assess complex data and describe it in both writing on the poster and in person in your interview. These are aspects of your future career that will be very useful talents.

The final exam will be cumulative except specific units that will be omitted - the exact syllabus will be provided.

**Anticipated Lecture Topics (subject to change)**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction to Bioinorganic Chemistry – this is a major review of the whole course and will provide an invaluable review resource before the final exam.</td>
</tr>
<tr>
<td>2</td>
<td>Essential Inorganic Chemistry: orbitals, electronic configurations, HSAB theory, ligands, coordination complexes, equilibrium/stability constants</td>
</tr>
<tr>
<td>3</td>
<td>Essential Biochemistry: amino acids and their acid-base properties, protein structure, cells, common biological ligands</td>
</tr>
<tr>
<td>4</td>
<td>Methods for Studying Metal-Containing Molecules: separation, spectroscopy</td>
</tr>
<tr>
<td>5</td>
<td>Photosynthesis: magnesium</td>
</tr>
<tr>
<td>6</td>
<td>Catalysis: zinc, cobalt, iron</td>
</tr>
<tr>
<td>7</td>
<td>Introduction to Metals in Medicine</td>
</tr>
<tr>
<td>8</td>
<td>Toxicity of Selected Elements</td>
</tr>
</tbody>
</table>

**Lecture Information**

<table>
<thead>
<tr>
<th>Section</th>
<th>Time and Room</th>
<th>Instructor</th>
<th>Office</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>TUESDAYS 9:30–10:30, THURSDAYS 9:30 -11:30</td>
<td>Dr. Martin Stillman</td>
<td>ChB 064</td>
<td><a href="mailto:Martin.stillman@uwo.ca">Martin.stillman@uwo.ca</a></td>
</tr>
</tbody>
</table>

If you wish to meet with me, please send an email for an appointment using only your Western email address and include *Chem 2211a* in the subject line (ESSENTIAL!)

**Important Dates**

<table>
<thead>
<tr>
<th>Event</th>
<th>Time and Room</th>
<th>Building</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st class</td>
<td>Thursday, 7th Sept. 9:30-11:30</td>
<td>ChB 9</td>
</tr>
<tr>
<td>Lectures cancelled</td>
<td>TUESDAY AND THURSDAY 9TH 11TH October</td>
<td></td>
</tr>
<tr>
<td>Last lecture</td>
<td>Thursday, 8th Dec</td>
<td></td>
</tr>
<tr>
<td>Last day to tell prof Stillman about Mid-Term exam conflicts or issues</td>
<td>Sept. 30th</td>
<td>BUT NOTE THE MID-TERM IS IN CLASS TIME</td>
</tr>
<tr>
<td>Mid term Exam</td>
<td>THURSDAY 25TH OCTOBER 9:30-11:20 CLASS TIME BUT NOT IN ChB 9..&gt;</td>
<td>EC 2168A MAKE SURE YOU</td>
</tr>
</tbody>
</table>
Note- there is no make-up because this is class time. KNOW WHERE THIS ROOM IS!!

Poster Topics posted for selection (teams of 2 work on each topic) | Tuesday October 16th this is for you to consider and then make your selections via the Doodle Poll on Friday | ON A DOODLE PAGE – url to be sent to you via OWL on FRIDAY Oct 19th at 12 noon.

Poster topic and teams finalized | TUESDAY 23rd October – at 9:30 (that is during the lecture) | Lower Ground corridor in ChB (ChB 064 to 051)

Posters must be up | Before noon 22nd November | Poster assessment (Assessment time and day must be selected by Nov. 14th at noon. Failure to select an assessment time and day from the Doodle scheduler provided online will result in a time and day being assigned.)

Nov 24th – Dec 1st | Note: assessment (30 mins) is outside class time between 8:30 am and 7:00 pm – Monday to Friday | ..in person in the corridor – outside class time assessment time to be selected from DOODLE timetable

### Evaluation Components

The overall course grade, out of 100, will be calculated as listed below. Listed next to the respective components are their maximum contributions toward the course grade.

<table>
<thead>
<tr>
<th>Component</th>
<th>Notes</th>
<th>Normal Value</th>
<th>Missed Midterm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterm Test</td>
<td>Thursday, 25th October 2018 9:30 – 11:20 CLASS TIME</td>
<td>30</td>
<td>--</td>
</tr>
<tr>
<td>Poster</td>
<td>Weighted average of individual and group marks Following in-corridor oral assessment</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>Final Exam</td>
<td>Cumulative, scheduled by the Registrar, 3 hours</td>
<td>45</td>
<td>70</td>
</tr>
</tbody>
</table>

**In order to obtain credit for the course, all of the following requirements must be met:**

1. Obtain a minimum of 50% on the Poster component (12.5 out of 25 or, in the case of a missed Midterm Test, 15 out of 30).

2. Obtain a minimum *weighted average* of 50% on the Midterm Test and the Final Exam. That is, the Midterm Test mark out of 30, plus the Final Exam mark out of 45, must be greater than or equal to 37.5 out of 75. In the case of a missed Midterm Test, a minimum of 50% (35 out of 70) 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.

The only calculator that may be used on tests and exams is the Sharp EL-510R(B) or equivalent “dumb” calculator. All other brands and models will be confiscated. Aside from the calculator, no other electronics (phones, iPods, etc.) may be in your possession during tests and exams, even for timekeeping purposes.

There is no Periodic Table provided for either mid-term or final exam.

You will be required to memorize the key metals and non-metals that impact bioinorganic chemistry. Prof Stillman will be very clear on what to memorize.

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 website: http://www.uwo.ca/univsec/handbook/appeals/scholoff.pdf. 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.

Missed Course Components
If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or supporting documentation to the Academic Counselling Office of your home faculty as soon as possible. If you are a Science student, the Academic Counselling Office of the Faculty of Science is located in NCB 280, and can be contacted at scibmsac@uwo.ca. In accordance with University policies on privacy, medical documentation can only be collected by the Academic Counselling unit of the student’s Home Faculty.

For further information, please consult the university’s medical illness policy at http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf.

Missed Midterm Test or Final Exam
There is no make-up midterm test. If YOUR FACULTY Dean’s Office has approved your circumstances, the value of the midterm test will be shifted to the poster component and to the Final Exam as described in the table shown on the previous page. If you miss the Final Exam, contact your Dean’s Office as soon as possible. They will assess your eligibility to write the Special Exam. Note that approval of accommodation for any course component worth 10% or more can only be made by the student’s Dean’s Office/Academic Counselling unit. Define the procedures for accommodation for work worth less than 10%; i.e., will the instructor grant accommodation, or is the student referred to the student’s Dean’s Office/Academic Counselling unit?

The Faculty of Science policies on Exam Conflicts are posted here: https://www.uwo.ca/sci/counselling/procedures/exam_conflicts.html

If you miss the Final Exam, please contact your faculty’s Academic Counselling Office as soon as you are able to do so. They will assess your eligibility to write the Special Exam (the name given by the university to a makeup Final Exam). (SPC).

Mandatory Notice from the Registrar
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 class is Chemistry 1301a and 1302b, or 1100a and 1200b, or the former 1050, 1020, or 023. Grade 12 or first-year university biology is also highly recommended. Antirequisites are Chemistry 2271a and the former 271a and 251. The website of the Office of the Registrar is http://www.registrar.uwo.ca.

Academic Policies
The website for Registrarial Services is http://www.registrar.uwo.ca.

In accordance with policy, http://www.uwo.ca/its/identity/activatenonstudent.html, 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.
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.

**Accessibility**

Please contact the course instructor if you require material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 ext. 82147 if you have questions regarding accommodation.

The policy on Accommodation for Students with Disabilities can be found here:  
www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation Disabilities.pdf

The policy on Accommodation for Religious Holidays can be found here:
http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf

**Student Development Centre**

Students are encouraged to make use of the free, study-skills courses and other services, including learning-skills counselling, provided by the Student Development Centre, http://www.sdc.uwo.ca.

"Students who are in emotional/mental distress should refer to Mental Health@Western  
http://www.uwo.ca/uwcom/mentalhealth/ for a complete list of options about how to obtain help."

Learning-skills counsellors at the Student Development Centre (http://www.sdc.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.

Students experiencing emotional/mental distresses should refer to Health and Wellness Centre (https://www.uwo.ca/health/) for a complete list of options about how to obtain help. Crisis contact information is available at:
https://www.uwo.ca/health/mental_wellbeing/crisis.html

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

**Department of Chemistry on Social Media:**

Webpage - https://www.uwo.ca/chem/
Twitter - https://twitter.com/westernuchem
Facebook - https://www.facebook.com/ChemistryatWestern