Chemistry 2271A – Structure and Bonding in Inorganic Chemistry (Fall 2020)  
Western University  
Department of Chemistry

Lectures: M-W-F 11:30-12:20 (on-line via OWL (Zoom); synchronous)

Prerequisite(s): Prerequisite(s): (Chemistry 1301A/B and Chemistry 1302A/B with a minimum mark of 60% in each), or (Chemistry 1301A/B and Integrated Science 1001X with a minimum mark of 60% in each).

A 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 will 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.

Antirequisite(s): Chemistry 2211A/B.

Instructor: Dr. John F. Corrigan (“JFC”)

Office: CHB 16

E-mail: corrigan@uwo.ca

E-mail correspondence can only be considered if it is sent from your @uwo.ca address. Please also include Chem 2271A in your e-mail subject line. I would prefer to discuss chemistry e-face to e-face (see office hours below) and would ask that you contact me by e-mail only for administrative reasons.

Course Webpage: Students should check OWL (http://owl.uwo.ca) on a regular basis for news and updates. This is the primary method by which information will be disseminated to all students in the class. The missing of critical information due to your failure to check OWL cannot be used as a basis for appeal.

NOTE: You will need to be registered in the course and have a UWO computer account to access this site as well as lectures via Zoom and work/quiz submission via Gradescope.

Office Hours: M 2:30-3:20 pm; On-line only, via Zoom. If you have a course component that conflicts with this time, alternate arrangements can be made.

Important Dates: Sept 9th – First Day of Classes  
Week of Sept 21st – First week of Tutorials  
Nov 2-8th – Fall Reading Break
Week of Nov 30th – Last Week of Tutorials
Dec 9th – Last Day of Classes
Dec 11-22 – Final Exam Period (exact date for 2271A TBA by Registrar)

Tutorials: All tutorials will be held on-line (synchronous via OWL/Zoom). Please attend the section for which you have registered. *The sections are listed as 3 h time slots, but these will be divided into two sessions (A and B). You will be informed which session (A or B) you are assigned to.* On alternating weeks where there is no quiz, each session will run for 1.5 h. On weeks where there is a quiz, each tutorial session A and B will only be 1 h, ending with a common ca. 30 minute scheduled quiz. Tutorial sections are held during the following times:

**Wed. 6:00 – 9:00 pm**
**Thurs. 9:30 am - 12:30 pm** *(one of these)*
**Thurs. 2:30 - 5:30 pm**

Tutorials will take place on a weekly basis for a total of 10 sessions. The topics covered are designed to build directly upon the material discussed in the lectures. Tutorials will have “worked assignments” that will be handed in for grading with the TAs there to assist you.

The name of the Tutorial TAs for Chem 2271A will be provided to you at the beginning of term. Questions regarding the tutorial content are to be directed to your specific TA (contact details will be provided). If you have general problems or issues with the tutorials, please direct your queries to Prof. Corrigan.

**Tutorial Topics (approximate schedule)**
1. Atomic Structure/Lewis Structures/VSEPR (2-3 Weeks)
2. Valence Bond Theory (1-2 Weeks)
3. MO Theory of Homo- and Hetero-Diatomics (2-3 Weeks)
4. Donor-Acceptor Compounds (1-2 weeks)
5. Solid-State Structures (2-3 Weeks)

**Details on Student Accessibility**
Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Accessible Education at 519-661-2147 or aew@uwo.ca for any specific question regarding an accommodation.

**Electronic Devices**
The use of electronic devices (aside from a basic scientific calculator and the device used to access evaluation on-line) is prohibited during quizzes and exams.
Course Attendance
Information missed during unexcused lecture absences will not be the grounds for academic appeal. **Students must attend and complete the assignments of at least 80% of tutorial sessions (8/10) to pass the course.**

Course Description
An overview of the Periodic Table, stressing trends in properties of the elements and their compounds; principles of ionic and covalent bonding; molecular orbital theory of simple molecules; solution and solid state chemistry of Group 1 and 2 compounds, with examples relevant to biology and everyday life.

General Course Outline
Chemistry 2271A will be composed of three main components: (1) Understanding the Periodic Table; (2) Structure and bonding in main group compounds as well as molecular orbital theory of simple diatomics; structures and bonding in common solids; and (3) Chemistry of selected main group elements from Groups 1, 2 and 13.

Course-Based Learning Outcomes
*Upon completion of Chem 2271A, students will be able to:*

- describe the underlying principles that led to the organization of the common Periodic Table and use the Periodic Table to rationalize trends in atomic properties.

- describe the scientific principles governing the structure and bonding of molecules derived from group 1, 2, and 13 elements.

- use their knowledge of structure and bonding in inorganic chemistry to predict and rationalize properties, mechanisms, and patterns of reactivity for molecules containing group 1, 2, and 13 elements.

- apply foundational knowledge to solve more complex structure and bonding questions relating molecules derived from group 1, 2, and 13 elements.

- work in small groups to evaluate and solve problems in a tutorial setting that are related to the potential impact chemistry may have on society, health, and the environment.

Required Text
*Inorganic Chemistry, 5th Ed.* Miessler, Fischer and Tarr
(hard copy or e-version; both via Campus Bookstore)
NOTE: This text will also be required for Chem 2281G and Chem 3371F, thus you should expect to get substantial use out of it.

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<thead>
<tr>
<th>Evaluation</th>
<th>Method 1</th>
<th>Method 2</th>
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<tbody>
<tr>
<td>On-line participation (Zoom polls)</td>
<td>5%</td>
<td>0%</td>
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<tr>
<td>(minimum 75% participation required)</td>
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<tr>
<td>Quizzes (held during tutorials)</td>
<td>5 x 6%</td>
<td>5 x 6%</td>
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<tr>
<td>Tutorials (10):</td>
<td>20%</td>
<td>25%</td>
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<tr>
<td>(assignments and participation)</td>
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<tr>
<td>Final Exam:</td>
<td>45%</td>
<td>45%</td>
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<td>(cumulative, date and time to be announced by Registrar)</td>
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NOTE: To pass Chemistry 2271A it is necessary to obtain a passing grade on the tutorial component and the final examination. Minimum 80% attendance at tutorials is also required. Failure to meet these criteria will result in a course grade of 44% (or lower) being assessed.

Please note that the final exam and (tentatively) tutorial quizzes will use Proctortrack. Students must have a reliable internet connection and computer with sufficient capacity to support the online proctoring tool. Mobile devices and tablets are not sufficient. The student is responsible for ensuring their account and computer are fully functional prior to the exam. The technology requirements for Proctortrack are available at the following link: https://www.proctortrack.com/tech-requirements

Message from the Dean of Science and the Chair of Chemistry
Cheating and Plagiarism
Students must write their essays and assignments in their own words. Whenever a student (or any scientist) takes an idea or passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations.

Plagiarism and cheating is a serious academic offence and will not be tolerated. Any incidents in this regard will be reported immediately to the Department Chair for consideration of disciplinary action as noted in the Western Academic Calendar under "Scholastic Offences".
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 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.

**Illness and Missing Course Requirements**
If you are unable to meet a course requirement due to illness or other serious circumstances, you must seek approval for the absence as soon as possible. Approval can be granted either through a self-reporting of absence or via the Dean’s Office/Academic Counselling unit of your Home Faculty. If you are a Science student, the Academic Counselling Office of the Faculty of Science can be contacted at scibmsac@uwo.ca. See https://www.uwo.ca/sci/counselling/ If a course component is missed for valid reasons the weighting will be transferred to the final examination. For further information, please consult the university’s policy on academic consideration for student absences:

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

If you miss 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 makeup Final Exam). You may also be eligible to write the Special Exam if you are in a “Multiple Exam Situation”, see:

http://www.registrar.uwo.ca/examinations/exam_schedule.html

**How this applies to Chem 2271A**
It is the policy in Chem 2271A that if you have missed a tutorial or quiz, it is your responsibility to contact Professor Corrigan and the science counsellors’ office.

...and about the Chem 2271A late policy
Due dates/times for tutorial and quizzes will always be at the end of your tutorial session. Late assignments/quizzes cannot be considered.

**Support Services**
Learning-skills counselors 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 who are in emotional/mental distress should refer to Mental Health @Western. (http://www.health.uwo.ca/mental_health) for a complete list of options about how to obtain help. Additional student-run support services are offered by the USC, http://westernusc.ca/services. The website for Registrarial Services is http://www.registrar.uwo.ca.
Science Student Donation Fund
This course is supported by the Science Student Donation Fund. If you are a B.Sc. or B.M.Sc. student registered in the Faculty of Science or Schulich School of Medicine and Dentistry, you pay the Science Student Donation Fee. This fee contributes to the Science Student Donation Fund, which is administered by the Science Students’ Council (SSC). One or more grants from the Fund have allowed for the purchase of equipment integral to teaching this course. You may opt out of the Fee by the end of September of each academic year by completing paperwork in the Faculty of Science’s Academic Counselling Office. For further information on the process of awarding grants from the Fund or how these grants have benefitted undergraduate education in this course, consult the chair of the department or email the Science Students’ Council at ssc@uwo.ca.

Social Media
Twitter
For those who are interested, I encourage you to get involved in the Western Chemistry community by joining us on Twitter: @westernuchem, @WorkentinChem, @Lagugne, @GilroyGroup, @RagagnaGroup, @CorriganLab, @jmblacquiere, etc.

Facebook
The Department also has a Facebook page, please visit the page to keep up to date with things happening in and outside of the department: https://www.facebook.com/ChemistryatWestern

Statements concerning Online Etiquette
This course will involve online interactions. To ensure the best experience for both you and your classmates, please honour the following rules of etiquette:

• “arrive” to class on time
• to minimize background noise, mute your microphone for the entire class until you are invited to speak, unless directed otherwise
• in order to give us optimum bandwidth and web quality, turn off your video camera for the entire class unless you are invited to speak
• unless invited by your instructor, do not share your screen in the meeting

The course instructor will act as moderator for the class and will deal with any questions from participants. To participate please consider the following:

• If you wish to speak, use the “raise hand” function in Zoom and wait for the instructor to acknowledge you before beginning your comment or question.
• Please remember to unmute your microphone and turn on your video camera (if you choose) before speaking.
• Self-identify when speaking.
Please remember to mute your mic and turn off your video camera after speaking (unless directed otherwise).

General considerations of “netiquette”:

- Keep in mind the different cultural and linguistic backgrounds of students in the course.
- Be courteous toward the instructor, your colleagues, and authors whose work you are discussing.
- Be respectful of the diversity of viewpoints that you will encounter in the class and in your readings. The exchange of diverse ideas and opinions is part of the scholarly environment. “Flaming” is never appropriate.
- Be professional and scholarly in all online postings. Use proper grammar and spelling. Cite the ideas of others appropriately.

Note that disruptive behaviour of any type during online classes, including inappropriate use of the chat function, is unacceptable. Students found guilty of Zoom-bombing a class or of other serious online offenses may be subject to disciplinary measures under the Code of Student Conduct.