

Course Schedule

IMPORTANT: ALL TIMES EASTERN - Please see the [University Policies](#) section of your Syllabus for details.

Week	Module	Activities and Assignments	End / Due Date	Weight (%)
Week 1	Module 01: Introduction and Review	Introduce Yourself		Ungraded
Week 2				
Week 3	Module 02: Molecular Geometry and Symmetry	Online Assignment 1 in Maple TA	Wednesday, October 1, 2014 at 11:59 PM (recommended)	4%
Week 4		Online Assignment 2 in Maple TA	Wednesday, October 8, 2014 at 11:59 PM (recommended)	4%
Week 5	Module 03: Atomic Structure			
Week 6		Hand-in Assignment 1	Friday, October 17, 2014 at 11:59 PM (firm)	8%
Week 7	Module 04: Ionic Compounds and Ionic Bonding			
Week 8		Online Assignment 3 in Maple TA	Wednesday, October 29, 2014 at 11:59 PM (recommended)	4%
Week 9	Module 05: Valence Bond Theory for Diatomic and Polyatomic Molecules	Online Assignment 4 in Maple TA	Wednesday, November 12, 2014 at 11:59 PM (recommended)	4%
Week 10				
Week 11	Module 06: Molecular Orbital Theory for Diatomic and Polyatomic Molecules	Hand-in Assignment 2	Tuesday, November 25, 2014 at 11:59 PM (firm)	8%
Week 12		Online Assignment 5 in Maple TA	Monday, December 1, 2014 at 11:59 PM (recommended)	4%
Final Exam	Note that you must obtain at least 45% on your Final Exam . If your Final Exam mark is less than 45%, then your exam mark is also your course grade.			64%

Final Examination Arrangement and Schedule

In courses with a final exam, students who are **exclusively** taking online classes must [provide examination arrangement information](#), using [Quest](#), by **Friday, September 26, 2014**. (Students taking one or more on-campus classes in addition to an online class within the same term do not need to provide exam centre information. Those exams will automatically be scheduled to be written at the University of Waterloo.)

Examination schedule details will be available on [Quest](#) approximately four weeks prior to the exam date. For instructions on how to find exam information, go to the [Quest Help](#) page.

Official Grades and Course Access

Official Grades and Academic Standings are available through [Quest](#).

Your access to this course will continue for the duration of the current term. You will not have access to this course once the next term begins.

Communication

Email/Discussions

Administrative questions or **technical problems** with Waterloo LEARN should be directed to the **Centre for Extended Learning** office at extendedlearning@uwaterloo.ca.

Questions relating to **academic issues** (e.g., course content, deadlines, etc.) or of a **personal nature** can be directed to your instructor, Carey Bissionnette, at cbissonn@uwaterloo.ca, or by phone at 519-888-4567 x32434.

Your instructor checks email frequently and will make every effort to reply to your questions within 48 hours, Monday to Friday.

A **General Discussion** topic has also been made available to allow students to communicate with peers in the course. Your instructor may drop in at this discussion topic but will not participate in the discussions.

News

Your instructor uses the **News** section of the **Course Home** page to make announcements during the term to communicate new or changing information regarding due dates, instructor absence, etc.

To ensure you are viewing the complete list of news items, you may need to click **Show All News Items**.

Course Description

Description

This course will provide students with an introduction to structure and bonding concepts in inorganic (and organic) molecules. It is designed as a basis for advanced courses in inorganic and physical chemistry that involve these topics. The course covers introductory symmetry concepts as applied to inorganic (and some organic) molecules, and introduces the fundamentals of valence bond and molecular orbital theories.

Prerequisites: CHEM 120 and CHEM 123.

This online course was developed by Carey Bissonnette, with instructional design and multimedia development support provided by the Centre for Extended Learning. Further media production was provided by Instructional Technologies and Multimedia Services.

About the Course Author - Carey Bissonnette

Carey Bissonnette obtained a B.Sc. in Chemistry, with a specialization in Mathematics in 1989 from the University of Waterloo and a Ph.D. in Theoretical Chemistry from the University of Cambridge in 1993. After two years of post-doctoral research, he obtained a permanent appointment in the Department of Chemistry at the University of Waterloo (UW). At UW, Carey has taught courses in general, physical, inorganic, and analytical chemistry. Currently, he is heavily involved with the on-campus versions of CHEM 120 and CHEM 123, serving as both Course Coordinator and instructor. Not only does he teach one (or more) of the 4 sections of CHEM 120/123 (with an on campus enrollment of over 1000 students), but also tries to make sure that things run smoothly for all sections. Carey's research interests are in the area of physical/theoretical chemistry, particularly in the development of new theoretical models and computational techniques that can be used to study the dynamics of unimolecular and bimolecular gas-phase reactions.



An important question I'm interested in answering is "Can we influence the rate of a reaction and the types of products we obtain by controlling the internal energies of the reactants?" I am particularly interested in the reactions of small polyatomic molecules because for such molecules, there are many different ways to distribute energy within the molecule.

Carey lives on the outskirts of Waterloo with his wife, two daughters and son. He is a self-confessed hockey fanatic who still plays regularly alongside "other aging wannabe's and has-beens." He has also coached hockey for several years at various age levels but mostly in the 8-12 year old range.

Materials and Resources

Textbook

Recommended:

The slides shown in the lecture presentations are the most important reference for this course. The material covered in the modules has been compiled from a variety of sources, including the following texts, each of which has been used previously as a text for this course. None of these texts, on its own, is adequate for the online version of CHEM 217, so I find it hard to justify having you spend \$100 or more on a textbook that does not cover all of the concepts we discuss.

Whether or not you buy a text, there may be times when you want additional material, or an alternative explanation of a particular concept. If or when that situation arises, I encourage you to consult any university-level textbook on inorganic chemistry.

1. G.L. Miessler, P.J. Fischer and D.A. Tarr. (2014). *Inorganic Chemistry (5th Edition)*. Prentice Hall.
2. P. Atkins, T. Overton, J. Rourke, M. Weller, F. Armstrong. (2006). *Shriver and Atkins Inorganic Chemistry (4th Edition)*. W.H. Freeman and Company.
3. C.E. Housecroft and A.G. Sharpe. (2005). *Inorganic Chemistry (2nd Edition)*. Pearson Prentice Hall.
4. J.E. Huheey, E.A. Keiter and R.L. Keiter. (1993). *Inorganic Chemistry: Principles of Structure and Reactivity (4th Edition)*. Harper Collings College Publishers.
5. R.L. DeKock and H.B. Gray. (1989). *Chemical Structure and Bonding*. University Science Books.

For textbook ordering information, please contact the [Waterloo Bookstore](#).

For your convenience, you can compile a list of required and optional course materials through [BookLook](#) using your Quest userID and password. If you are having difficulties ordering online and wish to call the Waterloo Bookstore, their phone number is +1 519 888 4673 or toll-free at +1 866 330 7933. Please be aware that textbook orders **CANNOT** be taken over the phone.

Resources

- [University of Waterloo Library](#) (Services for Students Taking Online Courses)

Grade Breakdown

The following table represents the grade breakdown of this course.

The grade breakdown (36% Assignments and 64% Final Exam) applies only if your mark on the Final Exam is at least 45%. If your mark on the Final Exam is less than 45%, then your final grade in the course is your exam grade.

Activities and Assignments	Weight (%)
Introduce Yourself	Ungraded
Online Assignments in Maple TA (5)	20%
Hand-in Assignments (2)	16%
Final Exam	64%

Course and Department Policies

Final Exam Policies

Calculators

You may bring a non-programmable calculator to the exam. If your favourite calculator is programmable (or can store textual information), then you must take your calculator to a proctor before the test to clear the memory. Please note: The Faculty of Mathematics has restrictions on the calculators that can be used in MATH courses. If you are also taking a MATH course, then you should consider buying one of the [calculators approved](#) by the Faculty of Mathematics.

Absence on the Day of the Final Exam

If you miss the examination, then you shall be given a grade of DNW (counts as 32% and a failed course) unless you missed the examination for valid reasons (e.g., illness). More information about **Accommodation Due to Illness** is provided on the [University Policies](#) page.

University Policies

Submission Times

Please be aware that the University of Waterloo is located in the **Eastern Time Zone** (GMT or UTC-5 during standard time and UTC-4 during daylight saving time) and, as such, the time that your activities and/or assignments are due is based on this zone. If you are outside the Eastern Time Zone and require assistance with converting your time, please try the [Ontario, Canada Time Converter](#).

Accommodation Due to Illness

If your instructor has provided specific procedures for you to follow if you miss assignment due dates, term tests, or a final examination, adhere to those instructions. Otherwise:

Missed Assignments/Tests/Quizzes

Contact the instructor as soon as you realize there will be a problem, and preferably within 48 hours, but no more than 72 hours, have a medical practitioner complete a [Verification of Illness Form](#).

Email a scanned copy of the Verification of Illness Form to your instructor. In your email to the instructor, provide your name, student ID number, and exactly what course activity you missed.

Further information regarding Management of Requests for Accommodation Due to Illness can be found on the [Accommodation due to illness](#) page.

Missed Final Examinations

If you are unable to write a final examination due to illness, seek medical treatment and provide confirmation of illness to the Centre for Extended Learning within 48 hours by emailing a scanned copy of the completed University of Waterloo [Verification of Illness Form](#) to support your request for accommodation. In your email, provide your name, student ID number, and the examination(s) missed. You will be **REQUIRED** to hand in the original completed form at the time you write the make-up examination, which should be within a week of having missed your exam. The original completed form must be received before you are able to write a re-scheduled exam.

Further information about [Accommodation Due to Illness](#) regulations is available in the Undergraduate Calendar.

Academic Integrity

In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect, and responsibility. **If you have not already completed the online tutorial regarding academic integrity you should do so as soon as possible.** Undergraduate students should see the [Academic Integrity Tutorial](#) and graduate students should

see the [Graduate Students and Academic Integrity](#) website.

Proper citations are part of academic integrity. Citations in CEL course materials usually follow CEL style, which is based on APA style. Your course may follow a different style. If you are uncertain which style to use for an assignment, please confirm with your instructor or TA.

For further information on academic integrity, please visit the [Office of Academic Integrity](#).

Discipline

A student is expected to know what constitutes [academic integrity](#) to avoid committing an academic offence, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about “rules” for group work/collaboration, should seek guidance from the course instructor, academic advisor, or the undergraduate Associate Dean. For information on categories of offences and types of penalties, students should refer to [Policy 71 - Student Discipline](#). For typical penalties, check [Guidelines for the Assessment of Penalties](#).

Appeals

A decision made or penalty imposed under [Policy 70 - Student Petitions and Grievances](#), (other than a petition) or [Policy 71 - Student Discipline](#), may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to [Policy 72 - Student Appeals](#).

Grievance

A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read [Policy 70 - Student Petitions and Grievances](#), Section 4. When in doubt please be certain to contact the department’s administrative assistant who will provide further assistance.

Final Grades

In accordance with [Policy 19 - Access To and Release of Student Information](#), the Centre for Extended Learning does not release final examination grades or final course grades to students. Students must go to [Quest](#) to see all final grades. Any grades posted in Waterloo LEARN are unofficial.

Note for Students with Disabilities

[AccessAbility Services](#), located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodation to lessen the impact of your disability, please register with AccessAbility Services at the beginning of each academic term and for each course.

Use of Computing and Network Resources

Please see the [Guidelines on Use of Waterloo Computing and Network Resources](#).

Copyright Information

UWaterloo's Web Pages

All rights, including copyright, images, slides, audio, and video components, of the content of this course are owned by the course author, unless otherwise stated. These Web pages are owned or controlled by the University of Waterloo, Centre for Extended Learning. By accessing the Web pages, you agree that you may only download the content for your own personal, non-commercial use. You are not permitted to copy, broadcast, download, store (in any medium), transmit, show or play in public, adapt or change in any way the content of these Web pages for any other purpose whatsoever without the prior written permission of the course author and the University of Waterloo, Centre for Extended Learning.

Other Sources

Respect the copyright of others and abide by all copyright notices and regulations when using the computing facilities provided for your course of study by the University of Waterloo. No material on the Internet or World Wide Web may be reproduced or distributed in any material form or in any medium, without permission from copyright holders or their assignees. To support your course of study, the University of Waterloo has provided hypertext links to relevant Web sites, resources, and services on the Web. These resources must be used in accordance with any registration requirements or conditions which may be specified. You must be aware that in providing such hypertext links the University of Waterloo has not authorized any acts (including reproduction or distribution) which, if undertaken without permission of copyright owners or their assignees, may be infringement of copyright. Permission for such acts can only be granted by copyright owners or their assignees.

If there are any questions about this notice, please contact the University of Waterloo, Centre for Extended Learning, Waterloo, Ontario, Canada, N2L 3G1 or by [email](#).