



CHMA10H3: Introductory Chemistry I
Fall 2022 Syllabus (Tentative)
University of Toronto Scarborough

Dear Students,

Welcome to Introductory Chemistry Part I! Our primary goal is to ignite your passion for chemistry by creating a meaningful learning environment with many real-life applications of chemistry. The knowledge you gain in this course is applicable in diverse disciplines, including Medicine, Pharmacy, Environmental Sciences, Neuroscience, Biochemistry and Biology. We are looking forward to teaching you many interesting topics on molecular structure, chemical reactions and nuclear chemistry. Please read the course syllabus to understand the learning expectations and assessment methods. Looking forward to meeting all of you! Although there is no pre-requisite for this course, it is highly recommended that you have completed grade 12 Chemistry and Grade 12 Advanced Functions or Grade 12 Calculus. The lectures for this course are three times a week for one hour and you are strongly encouraged to attend all the lectures to engage in the participatory lessons!

Instructors

Dr. Bernie Kraatz

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Lecturing from September 7th until October 21nd, 2022

Office Hours: TBA

Dr. Xiao-an Zhang

Office EV550

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Lecturing from the week of October 24th to December 5th, 2022

Office Hours: TBA

Dr. Nirusha Thavarajah,

Coordinating Labs from September 6th - December 5th, 2022

Office Room Number: EV554

Email: nirusha.thavarajah@utoronto.ca

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Email Policy

Please use the following guidelines when sending emails:

- i. Use your "utoronto.ca" email account for all your correspondences. If other accounts (Yahoo, Gmail, Hotmail, etc.) are used, your email may be filtered out as spam and thus not be received.
- ii. Put "CHMA10" in the subject line followed by the reason for the email and use professional language with a formal greeting.
- iii. Sign the email with your first and last name. Include your student ID number after your name.

Every effort will be made to respond to student emails within 36 hours (M-F) provided that the above protocol is followed.

Required Text Book

Chemistry: A Molecular Approach, 3rd Canadian Edition, by Nivaldo J. Tro, Travis D. Fridgen, Lawton E. Shaw, Pearson Canada Inc.

Lecture Delivery

Section	Delivery Mode	Days	Time	Location
LEC 01	In-person	Mon, Wed & Fri	12:00-13:00	AC 223
LEC 02	In-person	Mon, Wed & Fri	13:00-14:00	AC 223
LEC 03	Online-Asynchronous			Posted on Quercus

Website

CHMA10H3 maintains a Quercus web space, which archives a variety of course related information including: syllabus, grades, class announcements, lectures notes, homework and lab materials. Class e-mails will be sent periodically to your "utoronto.ca" e-mail account. **To login**, go to: <https://q.utoronto.ca>. Login using your UTORid username and password. Then click on the CHMA10 link.

Announcements

Official announcements regarding test schedule, material covered for each test and other important information will be posted on the CHMA10H3 course web site. It is absolutely your responsibility to check these postings regularly for important announcements.

Accessibility

Students with diverse learning styles and needs are welcome in this course. If you require accommodations for a disability, or have any accessibility concerns about the course or course materials, please contact us and or the Accessibility Services as soon as possible: SW 302, (416) 287-7560 or ability@utsc.utoronto.ca

Peer Facilitator Program (run through Quercus)

Facilitated Study Groups (FSG) are being run through the Centre for Teaching and Learning. These sessions are open to all students taking this course who want to improve their understanding of course material, improve their study techniques, and improve their grade. Attendance is voluntary. During FSGs, you will discuss important concepts, develop study strategies, and prepare for exams and assignments on course material. Course material is NOT re-lectured. The FSGs are led by a trained facilitator who has previously taken the course. A survey will be taken during the first week of class to determine the best days and times for most students, and they will begin probably the 2nd or 3rd week of class.

Tutorial of CHMA10

Our [Departmental Student Association](#) may offer tutorial session for CHMA10. Those online tutorials are designed to help students practice additional problems to meet the learning objectives of each lecture module. The tutorials will be held weekly on Zoom or MS Teams, starting from the second week of classes. Additional details on the format of the tutorial sessions and schedule will be available on the course Quercus page in the first week of classes. Although, there are no grades associated with the online tutorial sessions, you are strongly encouraged to attend the tutorial sessions for the betterment of your learning.

Homework

Short online homework problem sets will be released on Quercus at the end of each “module”. These are quizzes designed to test your understanding of concepts after we complete each chapter of the textbook. In general, once we have completed a chapter during the lectures, you will be given 2 weeks to complete the homework quiz. Keep an eye out for announcements that will clarify details regarding specific deadlines.

Writing Assignment: Peer Reviewed Mock Journal using PeerScholar

Writing is an essential skill in scientific communication. You will be asked to write an essay with the goal of exploring modern topics in chemistry. You will learn how to utilize both UofT Library resources and Web of Science while also training writing skills. You will convey your research and learning on your topic with a peer-reviewed 500-word essay.

The peer-review process is the cornerstone of writing and communicating new results and ideas in the sciences. A part of this process heavily depends on you! You will be asked to apply critical thinking skills to give and receive feedback to fellow colleagues. You will experience this process while doing this assignment by using PeerScholar and online learning modules that will guide you throughout the various components of the assignment. The assignment will be worth 12% of your final grade. Below is the breakdown of those marks:

	Weight	Date Due by:
Completion of Quercus module		
Writing Assignment Guidelines	0.5%	11:59 pm EST on October 1, 2022
Guided Tour of Essay	0.5%	11:59 pm EST on October 1, 2022
Feedback (giving and receiving)	1%	11:59 pm EST on, October 1, 2022
Web of Science	0.5%	11:59 pm EST on, October 1, 2022

References	0.5%	11:59 pm EST on, October 1, 2022
Essay and Feedback		
Draft Essay		Starts: 9 am EST on September 13, 2022 Ends: 11:59 pm EST on October 1, 2022
Quality and participation in the peer-feedback process	3%	Starts: 9 am EST on October 2, 2021 Ends: 11:59 pm EST on October 15, 2022
Final essay	6%	Starts: 9 am EST on October 16 th , 2022 Ends: 11:59 pm EST on November 5 th , 2022
	Total = 12%	

You can find much more detail about the writing assignment on the CHMA10 Quercus page.

Assessment and Grading Practices:

Graded Work	Weight (%)
Homework Assignment	8
Writing Assignment	12
Term Test #1	20% combined: One will be worth 8% and the other 12%. The term test with the higher grade will be assigned to be 12% while the term test with the lower grade will be assigned 8% of your final grade.
Term-Test #2	
Final Exam	35
Lab	25
FINAL MARK	100

To pass the course, you **MUST** pass the laboratory **AND** achieve either combined average of 50% from both term tests **OR** the final exam (and receive a final grade of 50+, of course!). The laboratory component of CHMA10 is **compulsory**.

Term-Test and Exam Policy:

Term-Tests

There will be 2 term tests that will count as 20% of your final grade. One will be worth 8% and the other 12%. The term test with the higher grade will be assigned to be 12% while the term test with the lower grade will be assigned 8% of your final grade. These tests will be written outside of class time. The exact date and time will be announced as soon as this information is made available from the registrar. The first term-test will be in-person with all multiple choice questions. The second term-test will be administered online via Quercus, and will be a mixture of numerical answers, multiple

choice, and multiple answer questions. To ensure you pass the course, you should aim to have a combined average of 50% or greater from both term tests and final exam.

Final Exam

There will be a **cumulative** exam written during the end of semester exam period. The exact date and time will be announced as soon as they are available. **Please note that if you miss the Final Exam, you must petition the Registrar's Office to write a make-up exam in the next formal exam period.** Check the UTSC Calendar for instructions and deadlines. The final exam will be administered in-person.

Allowed Aids

Only non-programmable, non-communicating calculators are allowed in tests and exams for this course (both lecture and lab). Students **must** use their own calculators.

MISSED EVALUATIONS (TERM TESTS & ASSIGNMENTS)

For missed term work due to illness, emergency, or other mitigating circumstances, please follow the procedures outlined below.

Notes:

- The following reasons are not considered sufficient for missed term work: travel for leisure, weddings, personal commitments, work commitments, human error.
- Missed Final Exams are handled by the Registrar's Office and should be declared on eService: <http://www.utsc.utoronto.ca/registrar/missing-examination>
- Instructors cannot accept term work any later than five business days after the last day of class. Beyond this date, you would need to file a petition with the Registrar's Office: <https://www.utsc.utoronto.ca/registrar/term-work>

Accommodations for Illness or Emergency, Religious Conflicts

For missed work due to ILLNESS, EMERGENCY, or RELIGIOUS CONFLICTS please complete the following process:

1. Please follow the [instruction](#) to complete the request for Student Absence Form.
2. **Declare your absence** on [ACORN](#) (Profile & Settings > Absence Declaration)

Deadline: You must complete the above form **within 5 business days** of the missed work.

Accommodations for Academic Conflicts, Time Zone Conflicts

For missed term work due to an ACADEMIC CONFLICT (i.e. two quizzes or tests scheduled at the same time), please complete the following process:

1. Complete the **Request for [Missed Term Work Form](#)** choosing "Other" as your reason for missed work and explaining the conflict in the space provided.

Deadline: You should report the conflict **at least two weeks (10 business days) before the date of the activity**, or as soon as possible if it was not possible to identify the conflict earlier.

Note: Multiple assignments due on the same day are not considered conflicts.

Accommodations may only be possible in the case of quizzes and tests that are both scheduled during the same discrete period. Back-to-back tests/quizzes are not considered conflicts.

Note: Students are responsible for keeping their course timetables conflict-free. Students who choose to register in two synchronous courses with overlapping lecture/tutorial/lab schedules may not necessarily be accommodated.

After submitting your documentation:

You are responsible for checking your Quercus course announcements daily, as accommodations may be time-critical.

You should continue to work on your assignments to the best of your ability, as extension accommodations may be as short as one business day, depending on the nature of the illness/emergency.

If an accommodation has been granted but you are unable to meet the conditions of the accommodation (ex. you need a longer extension, or you missed a make-up test), you will need to repeat the missed term work procedure and submit additional forms to request further accommodation. Note that in the case of a missed make-up test, an opportunity to write a second make-up test may not be provided.

Completion of this form does not guarantee that accommodations will be made. The course instructor reserves the right to decide what accommodations (if any) will be made. Failure to adhere to any aspect of this policy may result in a denial of your request for accommodation.

Missed Accommodations

If an accommodation is granted but a continued illness/emergency prevents you from meeting the requirements of your accommodation, you must repeat the missed term work procedure to request additional accommodations.

Academic Integrity

Academic integrity is one of the cornerstones of the University of Toronto. It is critically important both to maintain our community which honours the values of honesty, trust, respect, fairness and responsibility and to protect you, the students within this community, and the value of the degree towards which you are all working so diligently. Detailed information about how to act with academic integrity, the Code of Behaviour on Academic Matters, and the processes by which allegations of academic misconduct are resolved can be found online: <https://www.academicintegrity.utoronto.ca/>
According to Section B of the University of Toronto's Code of Behaviour on Academic Matters

<http://www.governingcouncil.utoronto.ca/policies/behaveac.htm> which all students are expected to know and respect, it is an offence for students to:

- To use someone else's ideas or words in their own work without acknowledging that those ideas/words are not their own with a citation and quotation marks, i.e. to commit plagiarism.
- To include false, misleading or concocted citations in their work.
- To obtain unauthorized assistance on any assignment.
- To provide unauthorized assistance to another student. This includes showing another student completed work.
- To submit their own work for credit in more than one course without the permission of the instructor.
- To falsify or alter any documentation required by the University. This includes, but is not limited to, doctor's notes.
- To use or possess an unauthorized aid in any test or exam.

There are other offences covered under the Code, but these are by far the most common. Please respect these rules and the values which they protect. Offences against academic integrity will be dealt with according to the procedures outlined in the Code of Behaviour on Academic Matters.

CHMA10H3 Lecture Schedule (*Tentative):

Week	Topic(s)	Suggested Reading
1	Introduction to Quantum Model of the Atom	7.1-7.3
2	Quantum Model of the Atom	7.4-7.7 (excluding Particle in a Box)
3	Periodic Trends of the Elements	8.1 – 8.9
4	pH, Acids and Bases, Precipitation Reactions	15.6; 4.3-4.5
5	Redox Reactions and Stoichiometry	4.6-4.9
October 8 th -14 th	READING WEEK	N/A
6	Gas Laws	5.1-5.10
7	Introduction to Enthalpy of Reactions Chemical Bonding I	6.8-6.9 9.1-9.8
8	Chemical Bonding I / Chemical Bonding II	9.9-9.10; 10.1-10.2

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9	Chemical Bonding II	10.3-10.7
10	Chemical Bonding II / Liquids, Solids, Intermolecular Forces	10.8; 11.1-11.8
11	Liquids, Solids, Intermolecular Forces / Nuclear Chemistry	11.1 - 11.8
Week 12	Nuclear Chemistry	19.6-19.12;
December 7 th – 8 th	Study Break	
December 9 th -21 nd	Final Exam Period	

Lecture Topics and Learning Outcomes

Below is a list of topics that will be covered in this course, along with the corresponding chapters and learning outcomes.

- 1. The Quantum-Mechanical Model of the Atom (Chapter 7):** Students will be able to
 - i. Explain the need for the development of the quantum mechanical model of the atom and the key scientists who made major contributions to its development.
 - ii. describe the evidence for the wave/particle duality of electrons and photons.
 - iii. Be able to describe the electronic configuration of an atom or ion using the four quantum numbers.
 - iv. Recognize how the quantum mechanical model of the atom is reflected in how the periodic table is organized.
 - v. Use Hund's rule and the Aufbau principle to write electron configurations for atoms and ions.

- 2. Periodic Properties of the Elements (Chapter 8):** Students will be able to
 - i. Write electron configurations from the periodic table and relate quantum numbers to the location of elements in the periodic table.
 - ii. Estimate the effective nuclear charge, Z_{eff} , and use it to explain and predict trends in:
 - Atomic size
 - Ionic size
 - Relative ionization energies
 - Electron affinity
 - iii. Recognize periodic behavior of the elements.
 - iv. Identify the three main types of chemical bonds and how to classify them based on electronegativity

- 3. Chemical Reactions and Stoichiometry (Chapter 4):** Students will be able to
 - i. Explain the pH scale and how it relates to water at equilibrium.
 - ii. Recognize and balance different types of chemical reactions including:
 - Acid/base: Identify strong acids and bases and write balanced neutralization reactions as well as reactions that evolve gases.
 - Precipitation: Predict solubility and write precipitation reactions
 - Redox: Identify oxidation states and balance redox reaction in both acid and base solution.
 - iii. Determine the limiting reagent in a reaction as well as calculating the theoretical and percent yields.
 - iv. Determine solution concentrations and dilutions molarity.

4. Gases (Chapter 5): Students will be able to

- i. Rationalize the macroscopic properties of gases in terms of the kinetic molecular theory
- ii. Explain the relationships between temperature, volume, pressure and quantity in terms of the kinetic molecular theory
- iii. Interpret barometer and manometer readings
- iv. Use the gas law equations to calculate pressure, temperature, volume, density, molar mass and/or amount of gas in both static and changing systems
- v. Solve stoichiometry problems involving gases
- vi. Apply the ideal gas law and Dalton's law of partial pressures to solve for properties of gas mixtures, including gas samples collected over water
- vii. Predict relative rates of diffusion/effusion for different gases and/or temperatures; use relative diffusion/effusion rate data to calculate relative molecular masses/molecular speeds
- viii. Interpret non-ideal behaviour of gases in terms of the kinetic molecular theory and its short-comings; predict the extent of non-ideal behaviour for different gas samples
- ix. Calculate properties for real gases using the van der Waals gas equation

5. Thermochemistry (Chapter 6): Students will be able to

- a) Apply Hess's Law to calculate changes in enthalpy from $\Delta_r H$ of a reaction or from standard enthalpies of formation.

6. Chemical Bonding I: Lewis Theory (Chapters 9): Students will be able to

- a) learn the key concepts related to Lewis theory, such as electron dot structures, octet rule, resonance and formal charges.
- b) Identify and explain ionic, covalent and metallic bonding; calculate lattice energies of ionic compounds.
- c) draw Lewis structures of atoms, ions and simple covalent molecules, as well as resonance structures; assign formal charges and assess competing resonance structures.
- d) compare and rationalize differences in bond length, bond vibrations bond energy and bond polarity.
- e) recognize and understand exceptions of octet rule.

7. Chemical Bonding II: Molecular Shapes, Valence Bond & Molecular Orbital Theory (Chapter 10):

Students will be able to

- i. learn VSEPR theory and be able to apply VSEPR to describe and predict electron geometry, molecular geometry, and the molecular polarity.
- ii. learn the fundamentals about Valence Bond Theory, in particular, the concepts of hybridized atomic orbitals, σ bond and π bond; write hybridization and bonding scheme using Valence Bond Theory.

- iii. learn the basic concepts of Molecular Orbital (MO) Theory, especially the linear combination of atomic orbitals (LACOs) approach; understand bonding orbital vs antibonding orbital; draw MO diagram, and predict bond order and magnetism of diatomic molecules.
- 8. Liquids, Solids and Intermolecular forces (Chapter 11):** Students will be able to
- a) describe the types of intermolecular forces and use them to explain and understand the physical properties of substances such as surface tension, viscosity and capillary action.
 - b) interpret vapor pressure curves and determine heat of vaporization using the Clausius–Clapeyron Equation 2-Point Form.
 - c) read and interpret heating curves and perform calculations based on data extracted from heating curves.
- 9. Radioactivity and Nuclear Chemistry (Chapter 19) :** Students will be able to
- i. understand major types of radioactivity, including α decay, β decay, γ ray emission, positron emission and electron capture; write nuclear equations of each type of radioactivity.
 - ii. understand the concept of the Valley of Stability; predict the stability and types of radioactivity of given isotopes.
 - iii. learn measurements of radioactivity, kinetics of radioactive decay and radiometric dating.
 - iv. understand nuclear fission and nuclear fusion, and calculate energy associated with nuclear reactions based on mass defect and nuclear binding energy.
 - v. learn the safety effects of radiation, and major applications of radioactivity in medicine and energy.

Laboratory

The laboratory component of CHMA10 is compulsory. The laboratory periods are three hours in length and run every other week. Odd numbered practicals (Week 1 students) start during week of September 12th. Even numbered practicals (Week 2 students) will have their first lab the week of September 19th.

Lab Manual and Notebook

A lab manual must be purchased from the UTSC Bookstore before your first lab. You may not use a lab manual from a previous semester: the experiments and course requirements will be different.

DO NOT wait to purchase your lab manual as it contains a host of important information:

- Lab Schedules and other important dates
- Late and absence policies
- Rules regarding safety
- Appropriate attire for the labs
- Guidelines on how to properly prepare for the lab

The bookstore **DOES NOT** stock enough lab manuals for everyone. If they run out, you **MUST** preorder a copy through the bookstore – this takes time. Failure to adhere to the rules and policies outlined within the lab manual will adversely affect your lab mark – in some instances the impact will be severe. In addition, students will be required to purchase their own lab notebook. The book must be hard-cover, permanently bound (not spiral or loose leaf) with the approximate dimensions 8.25” x 10.5” inches. They can be purchased at the UTSC bookstore; however, students are free to purchase their books at a merchant of their choice (so long as they meet the above requirements).

Laboratory Schedule

Week 1 lab students

Students assigned to practical sections ending in **odd numbers (i.e., P0001, P0003, P0005, P0007)** have their first lab during the week of September 12th.

Week 2 lab students

Students assigned to practical sections ending in **even numbers, (i.e., P0002, P0004, P0006, P0008)** have their first lab during the week of September 19th.

Laboratory Schedule:

Week of	Rotation	Experiment
September 12 th September 19 th	1 2	EXP 1 – INTRODUCTION TO VOLUMETRIC TECHNIQUES
September 26 th October 3 rd	1 2	EXP 2 – RECRYSTALLIZATION OF SALICYLIC ACID
October 8th- 14th Reading Week		
October 17 th October 24 th	1 2	EXP 3 – DETERMINATION OF ACID-NEUTRALIZING POWER OF COMMERCIAL ANTACIDS
October 31 st November 7 th	1 2	EXP 4 – DETERMINING THE ACETIC ACID CONTENT IN VINEGAR
November 14 th November 21 st	1 2	EXP 5 – MOLECULAR MODELING: LEWIS STRUCTURES AND THE VSEPR MODEL

Lab Skills Seminars

There will be a weekly lab skills seminar held on Tuesdays 12-1 pm at EV 140 by Professor Nirusha Thavarajah. The maximum capacity in EV is about 40 students. However, the sessions will be recorded and posted on Quercus for students who are unable to attend in-person seminars. Please note that the lab skills sessions are not mandatory, but it is highly recommended that you attend them in person (maximum student capacity is 40 for each Tuesday 12-1 session) or watch the recorded session to prepare well for each lab. The lab skills sessions will cover the **pre-lab work expectations** and **lab procedure and techniques** and the **post-lab work requirements** for each lab.

Lab Skills Seminar Schedule:

Dates	Rotation	Experiment
September 6 th September 13 th	1 2	EXP 1 – INTRODUCTION TO VOLUMETRIC TECHNIQUES
September 20 th September 27 th	1 2	EXP 2 – RECRYSTALLIZATION OF SALICYLIC ACID
October 4 th	1	EXP 3 – DETERMINATION OF ACID-NEUTRALIZING POWER OF COMMERCIAL ANTACIDS
October 8th- 14th READING WEEK		
October 18 th	2	EXP 3 – DETERMINATION OF ACID-NEUTRALIZING POWER OF COMMERCIAL ANTACIDS
October 25 th November 1 st	1 2	EXP 4 – DETERMINING THE ACETIC ACID CONTENT IN VINEGAR

November 8 th	1	EXP 5 – MOLECULAR MODELING: LEWIS STRUCTURES AND THE VSEPR MODEL
November 15 th	2	

Absence from the Laboratory

Accommodations for Illness or Emergency, Religious Conflicts

For missed labs and lab submissions due to ILLNESS, EMERGENCY, or RELIGIOUS CONFLICTS please complete the following process:

1. Complete the **Request for Missed Term Work Form**
2. **Declare your absence on ACORN** (Profile & Settings > Absence Declaration)

If you provide appropriate reasoning for missing your scheduled lab session, you may be eligible to join a make-up lab session, pending available lab space. If you fail to notify the day of your absence you will **NOT** be eligible to request a make-up lab session.

Deadline: You must complete the above forms within **5 business days** of the missed work to be considered as a late submission.

If a post lab assignment is missed and no reasonable explanation or supporting documentation are provided, there is penalty of 10% per day will be applied.

Completion of this form does not guarantee that accommodations will be made. The course instructor reserves the right to decide what accommodations (if any) will be made. Failure to adhere to any aspect of this policy may result in a denial of your request for accommodation.

If a student misses a lab and provides no reasonable explanation or supporting documentation, a mark of zero will be assigned.

Students must attend at least 3 out of the 5 scheduled experiments in order to be eligible to pass the course.

- If a student misses one experiment, and provides appropriate documentation, they will be considered for a make-up lab for that experiment.
- If a student misses a second experiment, and provides appropriate documentation, they will be considered for a make-up lab for that experiment.
- **If a student misses a third experiment, even if they provide appropriate supporting documentation, they will automatically fail the course.**

If you miss a lab when you are required to hand in material for marking (i.e. Report Sheets), the original report sheet or a scanned copy must be submitted to the Lab Coordinator (Ms. Veronica Cavallari) within 48 hours of the missed lab. Standard late penalties (**i.e. 10% per day up to 5 days – material submitted after 5 days will be assessed a grade of zero**) will be applied to material submitted after the 48 hr. deadline.

Late Policy

1. If you are late to your lab, but the pre-lab discussion is still underway you will be allowed to participate, given that you have complete all the pre-lab work.
2. If you are more than 30 minutes late for your lab you **WILL NOT BE ALLOWED TO PERFORM THE EXPERIMENT AND A MARK OF ZERO WILL BE ASSIGNED FOR ALL OF THE COMPONENTS ASSOCIATED WITH THAT LAB SESSION.**
3. If you show up to the lab without completing your pre-lab work in your notebook, you **WILL NOT BE ALLOWED TO PERFORM THE EXPERIMENT AND A MARK OF ZERO WILL BE ASSIGNED FOR ALL OF THE COMPONENTS ASSOCIATED WITH THAT LAB SESSION.**

Late Penalties

- Report Sheets
 - o -10% of the total (not your grade) per day for 5 days (weekends count as two days unless you email a scanned copy of it to the lab coordinator).
 - o After 5 days a grade of zero will be assigned
- Notebooks
 - o Your notebook will be graded on a regular basis during lab time; your assessment will include prelab preparation and in-lab performance. Refer to pages 10-12 for details on lab notebook preparation and assessments.

Laboratory Marking Scheme

The laboratory component is worth 25% of your final grade. The laboratory component is marked out of 100 total marks.

Assessment Methods	% Of final grade	Marks
Quiz (available online 3 days before your lab):	7.5%	6 marks (x 5)
Report Sheets/Graphs/Products:	12.5 %	10 marks (x 5)
Lab Notebooks	5.0%	4 marks (x 5)
Total Marks:	25 %	100

You must receive a passing grade in the laboratory section in order to pass the course

Lab Safety

Safety in the laboratory is an extremely important element in the chemistry program at this University. Failure to follow safe practices can cause laboratory accidents which may result in the loss of time, damage to clothing and other property, and most importantly personal injury. By following suitable precautions, you can anticipate and prevent situations that would otherwise lead to accidents.

Students registered in CHMA10H3F will be automatically enrolled in the WHMIS 2022 Training course for the Fall 2022 semester.

Once the course is made available an email announcement will be made and a link to the course will appear in your Quercus home page. As part of this course, students will be expected to watch a couple of videos (approximately 90 minutes long in total) and take a multiple-choice quiz on the material you just learned. Students must obtain 80% on the quiz to pass the WHMIS course. **In addition, students will be required to print off your quiz results and present them to your TA before you will be allowed to enter the lab.**

Safety Equipment

Students will be required to purchase approved indirect vented chemical splash safety goggles, and a lab coat before attending their first lab. These items can be purchased from both the Environmental and Physical Sciences Student Association (EPSA) and the Biology Student Association (BioSA) or through the bookstore. All safety eyewear must meet either ANSI Z87+ or CSA Z94.3 Standard for high impact protection (if you see one of those standards stamped on your eyewear somewhere then they meet that particular standard). As part of your ancillary fees, all CHMA10H3F students will be provided a pair safety glass at their first lab session which can be worn during your quizzes and pre-lab discussion; however, when the experiment begins, students will be required to wear their indirect vented chemical splash goggles.

Labs coats must be 100% cotton – no exceptions.

Further information regarding appropriate attire please see the guidelines outlined in your lab manual.

Note that students not wearing approved safety gear will not be allowed to participate in the lab.