



## Introductory Chemistry II — CHMA11 Winter 2021 University of Toronto Scarborough

Welcome to CHMA11, Introductory Chemistry Part II! We hope that everyone is keeping safe and well, both physically and mentally, as we all cope with the evolving global pandemic. Nevertheless, Chemistry remains to be an exciting subject with far-reaching applications in numerous disciplines—be it in biology and medicine, geology and environmental science, to materials science, food science, neuroscience, to forensics. While CHMA10 might have given you a foretaste, we're going to take things further in CHMA11. We'll continue to tackle the fundamentals of Chemistry, with the goal to make you appreciate the depth and importance of this discipline. Take a few minutes to read through this document, which contains important information, expectations and the tools you need to succeed in the course.

As with your other courses, the whole course will be delivered online this Winter 2021 term. You may already have an idea regarding how the lectures and labs will be delivered, but below we provide the relevant details to help you navigate through, and succeed in the course. We highlight the **new online tutorials** we are offering and we hope that many of you will participate and benefit from it.

We look forward to great virtual semester ahead,

Alex Voznyy, Course Instructor for weeks 1–7

Email: [o.voznyy@utoronto.ca](mailto:o.voznyy@utoronto.ca)

Office Hours: Fridays 10:00–11:00 am

Ruby Sullan, Course Instructor for weeks 8–13

Email: [ruby.sullan@utoronto.ca](mailto:ruby.sullan@utoronto.ca)

Office Hours: Fridays 10:00–11:00 am

Nirusha Thavarajah, Lab Coordinator

Email: [nirusha.thavarajah@utoronto.ca](mailto:nirusha.thavarajah@utoronto.ca)

Office Hours: Wednesday & Thursday 4:00–5:00 pm

### **REQUIRED TEXTBOOK**

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

## LECTURES

Mondays, Wednesdays, Fridays from 12:00 nn–13:00 pm

CHMA11 lectures will be pre-recorded and uploaded onto Quercus before the aforementioned class time. A TA will be available during the class hour to answer lecture-related materials.

**Summary After Lectures:** Students are encouraged to write and submit a summary within 24 hours of the lecture. You can upload the written summary as a pdf file under Assignments in Quercus. If 7/10 summaries (well written) are submitted, a bonus mark of 1% will be awarded to the final grade.

## OFFICE HOURS

Office hours will be offered via Bb Collaborate and other online platforms chosen by the instructor(s). Announcements and instructions pertaining to Office Hours will be communicated via Quercus or during lectures.

## ONLINE TUTORIALS (NEW!)

Online CHMA11 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 Bb Collaborate, starting from the 2nd week of classes. Additional details on the format of the tutorial sessions and schedule will be available on the course Quercus page in the 1st week of classes. Although, there are no grades associated with the online tutorial sessions—you are strongly encouraged to attend the tutorial sessions to facilitate your learning.

## VIRTUAL LABORATORY

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

The goals of this virtual lab program are to train you on safe laboratory practices and help you understand the fundamental chemistry laboratory techniques. The laboratory modules are designed to navigate you through safety training and experiments. The experiment modules are designed to teach the theory and lab techniques and assess your knowledge. Labs are directly or indirectly connected to the first-year chemistry content. As part of the pre-lab work, **you may be expected to read a recommended section from the textbook.** It is **mandatory** to pass the lab component of the course to be eligible to pass the course. The lab component is worth 20% of your course grade.

## Lab Schedule

The Synchronous Online Laboratory periods are three hours in length and run every other week.

**Rotation 1: ODD** numbered practicals (Week 1 students) have their first lab during week of January 18th.

**Rotation 2: EVEN** numbered practicals (Week 2 students) will have their first lab the week of January 25th.

Week of	Rotation	Experiment
January 18 <sup>th</sup> January 25 <sup>th</sup>	1 2	Experiment 1: Solution Preparation
February 1 <sup>st</sup> February 8 <sup>th</sup>	1 2	Experiment 2: Equilibrium
February 15 <sup>th</sup>	Reading Week	No Labs
February 22 <sup>nd</sup> March 1 <sup>st</sup>	1 2	Experiment 3: Strong Acid and Strong Base Titrations
March 8 <sup>th</sup> March 15 <sup>th</sup>	1 2	Experiment 4: Weak Acids and Weak Bases
March 22 <sup>nd</sup> March 29 <sup>th</sup>	1 2	Experiment 5: Electrochemistry

### Structure of the Synchronous Online Lab Sessions

The synchronous session of the virtual lab will commence 10 min past the hour of the scheduled time for your practical on **Bb Collaborate**. You are encouraged to arrive on time for your assigned session. The synchronous laboratory periods are **3 Hrs in length** and run every other week. If you are unable to attend the synchronous lab session during the scheduled hours, you can watch the recorded sessions after every lab to follow up with the instructions and complete the assigned tasks.

The **first 50 minutes of the lab** will be spent on discussing theory, procedure, and calculations pertaining to the lab. In the **second hour of the labs**, the students will be asked to work on their experiment in the Labster virtual lab environment. While working in the Labster virtual lab environment, if students have any questions, the TAs will be available to help on the BB collaborate during the synchronous lab hours. It is advisable that students open the Labster by opening a second browser with course Quercus. This way students can still remain logged in on BB collaborate lab forum with their TAs presence while working on the Labster virtual lab. The Labster virtual environment will be opened to students during the 3.0 Hr synchronous **lab time on the day of the registered practical session**. Students must finish their Labster virtual lab during their given time slot to obtain their lab results and record them in their notebook to do the calculations. These results will be used to complete the report sheet.

**The last hour of the lab session** will be used for TA office hours. Students are encouraged to attend the office hours to have all their questions pertaining to the virtual labs answered or if they don't have any questions, they can continue to work on completing their Labster virtual lab assignment. Students who cannot attend the synchronous TA office hours due to time zone differences are encouraged to post their questions on the lab discussion board for the TAs to be answered during the official contact sessions.

### **Structure of Lab Modules Organization on Quercus**

The CHMA11H3 lab content is organized as modules on Quercus.

**Lab Module 1** introduces the students to the organization of the virtual labs, lab schedule, lab preparation, lab assignments, and lab policies.

**Lab Module 2** is dedicated to explaining safety policies and practices in first-year undergraduate labs.

**Lab Module 3** exposes students to gather a deeper understanding on common laboratory techniques.

**Lab Module 4** is designed to give an introduction to Labster virtual experiments, and practice Labster experiments for students to try out before their first virtual experiment.

Students will be doing 5 virtual experiments this term using "Labster Virtual Simulations".

Each **Lab Experiment Module** (Modules 5 -9) is organized to contain the following components:

1. Virtual Lab Introduction & Theory
2. Labster Virtual Lab procedure
3. Pre-lab Quiz
4. Labster Virtual Lab Assignment link to carry out the experiment
5. Link to upload Notebook Report (to be uploaded as PDF)
6. Lab Report Sheet (to be completed uploaded back as PDF)

### **Lab Assessment Components**

Each experiment module on Quercus has the following Assessment components:

1. **Pre-Lab quiz:** The pre-lab quizzes are released 3 days before the labs and students have two 20 minutes attempts. The pre-lab quizzes have 3 questions, reflecting on the pre-lab reading and questions that students have to do before the lab. **Do not wait until the last minute to do your quizzes.**
2. **Labster Virtual Experiment:** Students will complete the Labster virtual experiment for each lab on the link provided under each experimental module. The Labster virtual environment will be opened for all students during their 3.0 Hr scheduled lab period. Students must finish their Labster virtual lab during their lab slot to obtain their results and record them in their notebook to do the calculations. These results will be used to complete the report sheet.
3. **Notebook Report:** Students will have 2 weeks to complete this from the day of their lab session, except for the lab (deadlines will be posted on Quercus). The last lab notebook

report will be due in one week. Detail outline for notebook preparation is provided in Lab Module 1. At the end of the term, the TA will select one notebook report randomly out of 5 experiments to grade.

4. **Post Lab Report Sheet:** Students will download a word document of the report sheet pertaining to the lab posted under the experiment module and complete it using the results obtained from the Labster virtual experiment. The completed report sheet will be uploaded back as a PDF file. Students have 2 weeks to complete post-lab report sheets, except for the last experiment, which will be due in one week. **\*Do not** wait until the last minute to submit your assignments. \*You are responsible for meeting the assignment due dates. Check the course Quercus on a regular basis to keep track of your assigned tasks.

Lab Assessments	% of the final lab grade	Marks out of 100
Pre-Lab Quizzes	4.0	4 marks (×5) = 20
Labster Virtual Experiments	4.0	4 marks (×5) = 20
Post Lab Report Sheets	6.0	6 marks (×5) = 30
Lab Notebook Report	2.0	10 marks
Lab Exam (details TBA)	4.0	20
Total Marks:	<b>20</b>	<b>100</b>

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

**Late submission of any pre or post-lab assessments will not be accepted. Please DO NOT e-mail your assignments to your TA or Lab Coordinator. E-mailed assignments will not be graded.**

### Lab Absence Policy

If you are unable to attend the synchronous lab session online due to time zone difference you must give ahead notice to the Lab Coordinator, Dr. Nirusha Thavarajah ([nirusha.thavarajah@utoronto.ca](mailto:nirusha.thavarajah@utoronto.ca)) to make arrangements to complete the Labster exercise at an alternate time on the same day.

There are **no make-up** synchronous lab sessions. If you are unable to complete the pre-or post-lab assignments due to a valid reason (e.g. medical), you must e-mail the appropriate documentation (e.g. A UTSC medical certificate signed by a physician) to Dr. N. Thavarajah **within 5 days of the due date of the assignment** for consideration to be excused from the lab assignment and have the grade weight added onto the lab exam. After the 5 days, the documentation will not be accepted and you will receive a grade of zero for all components of the lab.

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

Students must complete at least **3 out of the 5 lab modules** in order to be eligible to pass the course.

- If a student misses one experiment module assessments (pre & post), and provides appropriate documentation, the weight of that experiment will be added to the lab exam.
- If a student misses two experimental module assessments (pre & post), and provides appropriate documentation, the weight of both experiments will also be added to the lab exam.
- **If a student misses a third experimental lab module, even if they provide appropriate supporting documentation, they will automatically fail the lab component and therefore will automatically fail the course.**

### **WRITING ASSIGNMENT: Peer Reviewed Mock Journal using PeerScholar**

Not only do we want everyone to be comfortable with communicating through emails, but we also want to support your writing skills in the context of chemistry. 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 your writing skills. You will convey your research and learning on your topic in the form of a peer-reviewed 500-word essay.

\*\*Several of you may have completed a similar assignment during CHMA10 in Fall 2020 when you were asked to use SciFinder to search for relevant articles. You're more than welcome to continue using SciFinder, but we also encourage you to try searching using Web of Science, as well, as it can be an incredibly helpful database to complement SciFinder. **Please note that you are required to choose a different topic this time around.** It is an academic offense to re-submit work from other courses, so please take this as an opportunity to explore another topic that may be of interest to you. \*\*

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 15% of your final grade. You can find more details about the writing assignment on the CHMA11 Quercus page.

<b>Essay and Feedback</b>	<b>Percentage</b>
Final Essay	10%

Feedback	5%
Total	15%

## WEBSITE

Check Quercus (<https://q.utoronto.ca>) for important announcements, updates to readings, assignment topics, requirements, and evaluation, etc. Students are responsible for checking the course website regularly. Make sure that your ".utoronto" emails can accept the course announcements.

## EXAMINATIONS

**Midterm:** There will be one 90-minute mid-term test written outside of class either just before or just after Reading Week. The midterm will be administered online. The exact date and time and logistics will be announced as soon as they are available. If you miss the mid-term due to a legitimate reason, you must submit appropriate documentation within one week of your absence, then, the weight of the midterm mark would be transferred to the final exam. If the reason is medical, an official UTSC medical form should be downloaded from the Registrar's website: [http://www.utsc.utoronto.ca/~registrar/resources/pdf\\_general/UTSCmedicalcertificate.pdf](http://www.utsc.utoronto.ca/~registrar/resources/pdf_general/UTSCmedicalcertificate.pdf) and completed and signed by your physician. Students will not be permitted to write a make-up exam. If no acceptable documentation is received, you will receive a grade of zero for that test.

**Final Examination:** There will be a 3-hour, cumulative exam written during the end of semester exam period. The midterm will be administered online. The exact date and time and logistics 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. E.g. for a missed April Final Exam, the make-up Exam is in August. Your documentation is crucial for a successful petition and must be submitted by the last day of the exam period. Check the UTSC Calendar for instructions and deadlines.

## 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, the classroom or course materials, please contact us and or the Accessibility Services as soon as possible: (416) 287-7560 or [ability@utsc.utoronto.ca](mailto:ability@utsc.utoronto.ca)

## FACILITATED STUDY GROUPS (FSGs)

Facilitated Study Group (FSGs) will continue to be offered this Winter term, online. They are run through the Centre for Teaching and Learning. These weekly 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. In these sessions you will compare notes, 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. Exact details as to when/how they will be offered will be posted on Quercus.

## EVALUATION

Your final grade in the course will be calculated according to the grading scheme below:

Course Component	Percentage
Laboratory*	20%
Writing Assignment via PeerScholar*	15%
Mastering Chemistry Tests	10%
Mid-Term Test	25%
Final Exam	30%

\*To pass the course, **you must pass the laboratory and either the term test or the final exam** (and receive a final grade of 50+, of course!)

\*\*5% for your Feedback to your peers and 10% for the Final Essay

## ALLOWED AIDS

With assessments moved into an online format, we trust that you will uphold academic integrity when taking assessments (more details regarding academic integrity below). For any assessments, only non-programmable, non-communicating calculators are allowed for this course.

## 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: <http://www.artsci.utoronto.ca/osai/students>.

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.

### MASTERING CHEMISTRY

Several on-line assignments will be administered through MasteringChemistry, which allows you to practice at your own pace, receive meaningful feedback and use additional learning resources. To sign up for MasteringChemistry, please refer to the posted instructions on Quercus. For questions related to MasteringChemistry, contact Pearson 24/7 support: <https://support.pearson.com/getsupport>

### COURSE SCHEDULE

Week	Dates	Topic(s)	Suggested Reading
1	Jan 11–15	Solutions	12.1–12.7
2	Jan 18–22	Chemical Equilibrium	14.1–14.8
3	Jan 25–29	Acids and Bases	15.1–15.6
4	Feb 1–5	Acids and Bases cont.	15.7–15.11
5	Feb 8–12	Aqueous Ionic Equilibria	16.1–16.4
6	Feb 15–19	<b>Reading Week</b>	16.5–16.8
7	Feb 22–26	Aqueous Ionic Equilibria cont.	N/A
8	Mar 1–5	Gibbs Energy and Thermodynamics	17.1–17.5
9	Mar 8–12	Gibbs Energy and Thermodynamics cont.	17.6–17.9

<b>Week</b>	<b>Dates</b>	<b>Topic(s)</b>	<b>Suggested Reading</b>
<b>10</b>	Mar 15–19	Electrochemistry	18.1–18.4
<b>11</b>	Mar 22–26	Electrochemistry cont.	18.5–18.8
<b>12</b>	Mar 29–Apr 2	Chemical Kinetics	13.1–13.4
<b>13</b>	Apr 5–9	Chemical Kinetics	13.5–13.7
<b>15</b>	Apr 13–23	<b>Final Exam Period</b>	