



Introductory Chemistry II (CHMA11) - Winter 2013

University of Toronto at Scarborough



Welcome to CHMA11! Chemistry is an exciting subject with far-reaching applications in countless disciplines (biology, medicine, geology, environmental science, neuroscience, forensics, food science – the list goes on!). CHMA10 might have given you a taste of this, but in this course we're going to take things even further. We'll be continuing to teach you the fundamentals of the subject, but our hope is that this course will also give you an appreciation for the depth and importance of this discipline. By the end of the semester, you should be thoroughly convinced that chemistry is indeed *all around you!* Before we get started, please take a few minutes to read through this document. It contains important information which will help make sure you have all the tools you need to succeed in this course.

Staff Contact Information:

Instructors:

Prof. Jamie Donaldson (weeks 1-6)

SW632A

Email: jdonalds@utsc.utoronto.ca

Office Hours: Mondays 10-11; Wednesdays 3:00–4:30; Fridays by appointment

Prof. Artur Izmaylov (weeks 7-12)

SW638E

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Office Hours: Mondays and Wednesdays, 3:00 – 4:30

Lab Coordinator:

Dr. Scott Ballantyne

SW155C

Email: sballant@utsc.utoronto.ca

Office Hours:

Email Policy:

Please use a valid “utoronto.ca” account for all CHMA11 correspondence. Emails received from other accounts are frequently filtered out as spam and may not be received. When composing your email, please use professional language. Be sure to include the course code as part of the subject line and sign the email with your first and last name, as well as your student ID. Your email will be answered as soon as possible.

Lecture Schedule:

Session 1 lectures take place Monday, Wednesday, Friday in AC223 between 12:10-1:00 pm.

Session 2 lectures take place Monday, Wednesday, Friday in AC223 between 1:10-2:00 pm.

Required Text:

Chemistry: A Molecular Approach, 2nd Edition, by Nivaldo J. Tro (the same book as you used in CHM A10). The text, solutions manual and the online homework program (Mastering Chemistry) can be purchased together from the UTSC Bookstore as a package. If you took CHMA10 last semester you can continue to use your text and Mastering Chemistry account for this course.

List of Topics (Tentative*):

*Subject to change. Check on Blackboard for the most up to date lecture schedule.

Week	Topic(s)	Suggested Reading
Jan 7-11	Review of chemical bonding; Intermolecular forces	(10.1-10.8) 11.1-11.4
Jan 14-18	Properties of liquids and solids; phase diagrams; covalent/ionic solids; crystal structures	11.5-11.13
Jan 21-25	Solutions and their physical properties	12.1-12.8
Jan 28-Feb 1	Chemical kinetics	13.1-13.6
Feb 4-8	Catalysis; Introduction to chemical equilibrium	13.7; 14.1-14.6
Feb 11-15	Chemical equilibrium continued; Review for midterm	14.7-14.9
Feb 18-22	Reading Week	n/a
Feb 25-Mar 1	Introduction to acids and bases	15.1-15.7
Mar 4-8	Acid-base properties of salts and polyprotic acids; molecular structure and acid strength; Lewis acids and bases	15.8-15.12
Mar 11-15	Aqueous ionic equilibria; Buffer solutions; Titration curves; Solubility equilibria; Complex ions	16.1-16.8
Mar 18-22	Spontaneous change, entropy, and free energy	17.1-17.5
Mar 25-27	Free energy changes in chemical reactions; Equilibrium; Introduction to electrochemistry Introduction to electrochemistry	17.6-17.9; 18.1-18.6
Apr 1-5	Applications of electrochemistry	18.7-18.9
Apr 8	Exam Review	

Website:

CHMA11 maintains a Blackboard web space which archives a variety of course-related information including: grades, class announcements, lecture and lab materials (including access to recorded lectures), contact information and links to outside resources. In addition, class emails will periodically be sent via Blackboard. ***In order for you to receive these emails, you must have a valid “utoronto.ca” email account registered with ROSI.***

To login, go to: <https://portal.utoronto.ca/webapps/portal/frameset.jsp>. Click on “log-in to the portal” at the top left. Login using your UTORid username and password (same as what’s used for your UTORmail). Under the “My Courses” box (top right), click on the CHMA11 link.

Discussion Board:

An online discussion board will be maintained through Blackboard. This online space will provide you with a place to post and answer questions related to the course material. You may post anonymously, or as yourself. The forums will be monitored by the course instructors to ensure that the questions are answered accurately. In addition, frequently asked questions (with their answers) may also be posted here by the instructors and/or teaching assistants. *Please note:* Posts which contain answers/solutions to the Mastering Chemistry Homework Assignments are not permitted and will be promptly removed.

Mastering Chemistry Homework Assignments:

There will be weekly online homework assignments which you will have to complete through the online program “*Mastering Chemistry Plus*”. Assignments will be made available Wednesdays at 1:00 pm and will be due the following Tuesday at 9:00 am.

Registration instructions if you already have an active account:

Go to: <http://www.masteringchem.com/>.

- Enter your "login Name" and "Password".
- You will now be prompted for the new course ID. Enter **CHMA11S2013**
- This will take you into the Mastering Chemistry program for this course.
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Registration instructions if you don’t have an account:

- Go to: <http://www.masteringchem.com/>
- Under the section for “Register” click on the " Students" button.
- Select "Yes I have an Access Code” and click “continue”.
- Click “I accept” to the License Agreement and Privacy Policy.
- Select “No” to indicate that you do not have an account and set up your login and password
- Enter your Access Code (comes with the textbook package)
- Complete the requested account information page. **To receive credit for your work, ensure that you enter the same name as is on file in ROSI.** Under School Name, select “University of Toronto – Scarborough”.
- Now that you have an account, follow the instructions above to enroll in the Mastering Chemistry account for this course.

Midterm:

There will be one 90 minute mid-term test written outside of class either just before or just after reading week. The exact date, time and location 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*. If the reason is medical, an official UTSC medical form should be downloaded from the Registrar’s website http://www.utoronto.ca/~registrar/resources/pdf_general/UTSCmedicalcertificate.pdf and completed by your physician. Students with a validated absence will 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 exact date, time and location 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.

Labs:

The laboratory component of CHMA11 is compulsory. In order to pass the course, you must also pass the lab component.

Lab Schedule:

Laboratory periods are three hours in length and run every other week. Odd numbered practicals (Week 1 students) begin the week of January 14th. Even numbered practicals (Week 2 students) begin the week of January 21st.

Week 1 lab students:

Students assigned to practical sections ending in odd numbers, P0001, P0003, P0005 etc. begin their labs during the week of January 14th.

Week 2 lab students:

Students assigned to practical sections ending in even numbers, P0002, P0004, P0006 etc. begin their labs during the week of January 21st.

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! 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)

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
- Marking schemes
- 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.

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.

You will be required to enroll in the University of Toronto WHMIS online course (EHS005) accessible through the Portal website using your UTORid. Instructions on how to access the course will be posted on the CHMA11 blackboard site. You will be expected to watch the video (approximately 30 minutes long) and take a multiple choice quiz on the material you just learned. You must obtain 80% on the quiz to pass the WHMIS course. You will be required to print off your quiz results and present them to your TA before you will be allowed to enter the lab.

Please note if you successfully passed CHMA10 in the Fall of 2012, then you have already taken and passed the EHS005 WHMIS course and you do not need to enroll again. However, you will be expected to print off your results and present them to your TA before you will be allowed to participate in the first lab.

Safety Equipment:

Students will be required to purchase safety goggles (mandatory), safety glasses (optional) and a lab coat (mandatory) before attending their first lab. This year, only specific eyewear models will be approved for student use:

Safety Goggles - Uvex Stealth OTG model# S3970DF

Safety Glasses – Nemesis models V30 and V30 VL

Safety Glasses (over prescription eyewear) – Nemesis model V50

Labs coats must not contain more than 65% polyester material.

These items can be purchased from both the Environmental and Physical Sciences Student Association (EPSA) and the Biology Student Association (BioSA).

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

Ancillary Fees:

The Department of Physical and Environmental Sciences at UTSC provides state-of-the-art education in chemistry. Chemistry being an experimental science makes learning in a laboratory setting critical. In order to provide the latest technology to enhance the student learning experience, UTSC will be charging ancillary fees for all chemistry courses that have a laboratory component. Those fees are used to recover the cost of materials and services used during the lab and to maintain and upgrade the equipment used by students. To view a complete list of those fees, students are encouraged to visit the following link:

<http://www.planningandbudget.utoronto.ca/Assets/Academic+Operations+Digital+Assets/Planning+26+Budget/2012-13+Category+5+Ancillary+Fees.pdf>

Tutorials:

Tutorials are scheduled in the same time slot as your laboratory but in the alternate week. Your tutorial section is linked to your lab section and is the same section number as your lab section (i.e. PRA0001 students are assigned to TUT0001).

Attendance at the tutorials is compulsory and the tutorial quizzes will count towards your final grade (see grading scheme below).

Tutorials are compulsory and are scheduled within the same time slot as your CHMA11H laboratory but in the alternate week of your assigned laboratory. The duration of the tutorial is one hour. The room assignments for the tutorials ARE NOT THE SAME as your labs. Your Tutorial number (TUTXXXX) is the same as your Practical number (PRAXXXX). Please

check the CHMA11H web site (intranet) for a link to the timetable where you can view the times and room assignments of your tutorials.

Week 1 lab students

Students assigned to tutorial sections ending in odd numbers, TUT0001, TUT0003, TUT0005 etc. begin their tutorials during the week of January 21st.

Week 2 lab students

Students assigned to tutorial sections ending in even numbers, TUT0002, TUT0004, TUT0006 etc. begin their tutorials during the week of January 14th.

Additional Resources:

The Chemistry Aid Centre is a student-run, drop-in help centre where students from introductory general chemistry and organic chemistry courses can go for help with lecture and lab materials. The centre is open from 10-4 pm Monday through Thursday and is located in SW221 (one floor above the chemistry teaching labs). The centre is staffed with volunteer tutors, all of whom have done well in the course previously and have been trained on how to effectively help others. The Chemistry Aid Centre is a student-run, drop-in help centre where students from introductory general chemistry and organic chemistry courses can go for help with lecture and lab material. The centre is staffed with volunteer tutors, all of whom have done well in the course previously and have been trained on how to effectively help others. Students looking for help with the course can visit the centre in P0104, room 107 starting in the second week of classes. Please visit the Chemistry Aid Centre website at <http://www.uts.utoronto.ca/~chemaid/> for up to date scheduling information and tutor profiles. In addition, a Facilitated Study Group (FSG) program organized by the Centre for Teaching and Learning is also available to support this course. The FSG program is designed to enhance the student experience, reduce attrition, and help students succeed in historically difficult courses. Detailed information about FSG is available online (<http://ctl.uts.utoronto.ca/home/fsg>). Please note that tutors in CAC and FSG will NOT give out answers to any graded homework or lab assignments.

Grade Calculation:

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

Graded work	Weight
Online homework / tutorials	5%
Laboratory*	25%
Mid-Term Test	25%
Final Exam	45%
TOTAL	100%

Note: 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!)

Calculators:

Only non-programmable, non-communicating calculators are allowed in tests and exams for this course (both lecture and lab). The following inexpensive calculators (most available at the U of T Bookstore) are acceptable:

Texas Instruments: TI-30, TI-34II Explorer Plus, TI-32 Explorer Plus, TI-32
Sharp: EL-531, EL-520, EL-509, EL-546

Casio: fx-65, fx-250, fx-260, fx-280

Invigilators have the authority to check calculators and to confiscate illegal models. Students who have illegal calculators confiscated during a test/exam will be supplied with an allowed calculator but an immediate penalty of 10% will be imposed for that test/exam. Students without a calculator will also be allowed to borrow an allowed model, but at the cost 10% off their mark on that test/exam.

Accessibility:

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach us and/or the AccessAbility Services Office as soon as possible. We will work with you and AccessAbility Services to ensure you can achieve your learning goals in this course. Enquiries are confidential. The UTSC AccessAbility Services staff (located in S302) are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations (416) 287-7560 or ability@utsc.utoronto.ca.

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.

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.