# CHM 211
## Chemicals in the Environment: The Good, The Bad, & The Ugly

**Schedule**
Lecture: Mon and Wed, 12:00 -13:00
Tutorial: *Thurs, 13:00 – 14:00 (see info below)*
Student hours: during the tutorial timeslot or by appointment in person or via Zoom

**Contact Information**
Prof. Jennifer Murphy, LM 248, jen.murphy@utoronto.ca
I will respond to email within 24 hours on weekdays

**Course Overview**
The world is made up of chemicals: some are natural, and some are invented and manufactured by humans. New chemicals are often intended to make our lives safer and easier but may have unanticipated consequences once they are released into the world. In this course, students will discover what properties of chemicals can lead to risks for the environment and for human health. Through discussion of how chemicals in the environment are understood by scientists, and described in popular media, students will develop improved scientific literacy to better evaluate risk in their own lives.

**Exclusion:** CHM135H1/ CHM136H1/ CHM151Y1
**Distribution Requirements:** Science
**Breadth Requirements:** The Physical and Mathematical Universes (5)

**Learning Objectives**

In this class you will develop both chemistry content knowledge and relevant scientific skills. Upon completion of this class you will:

1. Have a basic understanding of how the properties of both natural and synthetic chemicals can be used by humans.
2. Have a basic understanding of how chemical structures impact the reactivity and fate of molecules in the environment.
3. Have an appreciation of how scientific knowledge is generated and applied.
4. Have the ability to critically engage with scientific information that is covered in the popular media.
5. Have the ability to apply scientific insight to choices you make in your daily life.

**Assessments** (drop deadline is March 19)

25 % Discussion grade (Quercus discussion board, in-person discussions in class)

10 % In-class quizzes (three quizzes Feb 1/Mar 8/Apr 5 with the lowest score dropped)

20 % Media critique (5 min video/oral presentation) due Mar 8 at 5:00 pm

25 % Self-directed research project (2000 words) due April 3 at 5:00 pm

20 % Mercury game (International treaty negotiation simulation) – will require a 2 hour block outside of class

**Course organization**

While the course was originally scheduled to have two hours of class and one hour of tutorial, given the small number of students enrolled in the course, we will have adequate time for all to participate in group discussion during class. As such, the tutorial timeslot will be used as time for students to consult with the professor on a drop-in basis, or to carry out research for their media critique or self-directed research project.

When readings or videos are assigned for discussion, students are expected to post their comments on the Quercus discussion board before 10 am on the day of the discussion (earlier is better!) and are encouraged to bring up comments during class time.

Below is a preliminary schedule of topics and resources for the class. The schedule will be revised as the semester proceeds. It is your responsibility to check Quercus regularly for updates.

| Week | Monday class | Wednesday class |
|---|---|---|
| 1<br>Jan 9 | Introductions | Discussion of "The Man Who Killed Millions and Saved Billions" video |
| 2<br>Jan 16 | Energy, bonds, and light | Discussion of "The Man Who Accidentally Killed the Most People in History" video |
| 3<br>Jan 23 | Lead in the environment | Discussion of "Lead in the "Water"<br>Ozone layer and the Montreal Protocol |
| 4<br>Jan 30 | Information literacy and library resources | *Quiz 1*<br>Outdoor Air Pollution |
| 5<br>Feb 6 | Indoor air pollution | Discussion of "The Hidden Air Pollution in Our Homes" |
| 6<br>Feb 13 | Chemicals, exposure, health risks | Discussion of "The gas stove regulation uproar, explained" |
| Break | ********** | ********** |
| 7<br>Feb 27 | Persistent organic pollutants | Discussion of Silent Spring excerpt |
| 8<br>Mar 6 | Forever chemicals | *Quiz 2 and Media critique deadline*<br>Discussion of "You probably have "forever chemicals" in your body. Here's what that means" |
| 9<br>Mar 13 | Personal care products | Discussion of "Want Cleaner Air? Try Using Less Deodorant" |
| 10<br>Mar 20 | Plastic in the environment | Discussion of "A Grand Plan to Clean the Great Pacific Garbage Patch" |
| 11<br>Mar 27 | Mercury in the environment | Mercury game prep<br>**Mercury game played outside of class time* |
| 12<br>April 3 | Mercury game recap<br>*Self-directed research project deadline* | *Quiz 3*<br>Class wrap-up |

**Course Policies**

Each member of this course is expected to maintain a:

(i) professional and respectful attitude during all course activities, including classes, and online activity.

(ii) calendar/schedule/organizer to ensure that all course activities are completed, and due dates are met.

(iii) collection of notes recorded independently based on concepts covered in course activities

(iv) familiarity with the university policy on Academic Integrity

The University of Toronto is committed to equity, human rights and respect for diversity. All members of the learning environment in this course should strive to create an atmosphere of mutual respect where all members of our community can express themselves, engage with each other, and respect one another's differences. As a Course Instructor, I will neither condone nor tolerate behaviour that undermines the dignity or self-esteem of any individual in this course and wish to be alerted to any attempt to create an intimidating or hostile environment. It is our collective responsibility to create a space that is inclusive and welcomes discussion. Discrimination, harassment and hate speech will not be tolerated. If you have any questions, comments, or concerns, we encourage you to reach out to the staff in our Equity Offices.

Late assignment submissions will be penalized at a rate of 10 % daily.

If you are ill during one quiz, your overall quiz grade will be calculated based on the quizzes you did write.

Absence from the Mercury Game will be problematic for all members of the course, thus you are strongly encouraged to attend. If you are will or experience an emergency, please contact the instructor as early as possible.

**Institutional policies**

ACADEMIC INTEGRITY

Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensuring that a degree from the University of Toronto is a strong signal of each student's individual academic achievement. As a result, the University treats cases of cheating and plagiarism very seriously. The University of Toronto's Code of Behaviour on Academic Matters (governingcouncil.utoronto.ca/secretariat/policies/code-behaviour-academic-matters-july-1-2019) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences. Potential offences include, but are not limited to:

On quizzes and term tests:

1. Using or possessing unauthorized aids. Please note that the use of websites (such as Chegg.com or the course discussion board) to post quiz/term test questions or to post/access answers to questions is an academic offence under the University of Toronto's Code of Behaviour on Academic Matters. Alleged instances of this nature are forwarded to the Faculty of Arts & Science Student Academic Integrity office.
2. Looking at someone else's answers or collaborating/discussing answers during a quiz or term test.
3. Misrepresenting your identity.

In general academic work:

1. Falsifying institutional documents or grades.
2. Falsifying or altering any documentation required by the University.

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, you are expected to seek out additional information on academic integrity from your instructor or from other institutional resources (see www.academicintegrity.utoronto.ca/).

Plagiarism Detection

Normally, students will be required to submit their course essays to the University's plagiarism detection tool for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the tool's reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of this tool are described on the Centre for Teaching Support & Innovation web site (https://uoft.me/pdt-faq).

COPYRIGHT

If a student wishes to copy or reproduce class presentations, course notes or other similar materials provided by instructors, he or she must obtain the instructor's written consent beforehand. Otherwise, all such reproduction is an infringement of copyright and is absolutely prohibited. More information regarding this is available here: https://teaching.utoronto.ca/ed-tech/audio-video/copyright-considerations/

ACCESSIBILITY NEEDS

Students with diverse learning styles and needs are welcome in this course. The University of Toronto is committed to accessibility: if you require accommodations for a disability, or have any other accessibility concerns about the course, please contact Accessibility Services as soon as possible.

ACCOMMODATIONS FOR RELIGIOUS OBSERVANCES

Following the University's policies, reasonable accommodations will be made for students who observe religious holy days that coincide with the due date/time of an assignment, tutorial, class or laboratory session. Students must inform the instructor before the session/assignment date to arrange accommodations.

ACKNOWLEDGEMENT OF TRADITIONAL LANDS

Required: (suggested text provided): We wish to acknowledge this land on which the University of Toronto operates. For thousands of years, it has been the traditional land of the Huron-Wendat, the Seneca and, most recently, the Mississaugas of the Credit River. Today, this meeting place is still the home to many Indigenous people from across Turtle Island and we are grateful to have the opportunity to work on this land.