

## *CHM1401 - Transport and Fate of Chemical Species in the Environment - Fall 2023*

This is the core course for new graduate students in environmental chemistry, and provides an introduction/refresher to concepts from physical, analytical and organic chemistry and their application to the environment. It also provides you with the background to better understand the research of your peers and colleagues.

We meet from 9:00 - 12:00 on Tuesdays, with the time often divided into a two-hour lecture and one-hour workshop. The current plan is for an in-person class with no remote/virtual option. Active participation of students is encouraged and expected at all times. Readings and assignments for the course will be posted on the Quercus site (q.utoronto.ca) and students are responsible for checking the site regularly for updates and resources. We will meet on the St George campus in LM319 except for the weeks of Nov 14, 21, 28, where class will take place at UTSC in EV502.

### **Instructors**

Jen Murphy (coordinator), jen.murphy@utoronto.ca

Scott Mabury, scott.mabury@utoronto.ca

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### **Lecture Schedule**

Sep 12	Introduction, physical environment (JM)
Sep 19	Earth and climate system (JM)
Sep 26	Photochemistry and kinetics (JM)
Oct 3	Gas- and Multi-phase Reactions (SM)
Oct 10	Aqueous reactions (SM)
Oct 17	Biological reactivity and toxicity (SM)
Oct 24	Equilibrium/phase partitioning/mass balance models (FW)
Oct 31	Equilibrium/phase partitioning/mass balance models (FW)
Nov 7	Equilibrium/phase partitioning/mass balance models (FW)
Nov 14	Carbon cycle (AS)
Nov 21	Natural organic matter (AS)
Nov 28	Instrumentation (AS)
Dec 5	Review (JM)

### **Evaluation**

Assignment from each instructor + workshop participation (expected due dates: JM – Oct 3, SM – Oct 24, FW – Nov 14, AS – Dec 5)	40 %
Term paper - submit by email to JM (outline due Nov 14, paper due Dec 8)	30 %
Final exam (Mon, Dec 18) (in-person, closed book but two-sided equation sheet can be brought to exam)	30 %

Late assignments and papers lose 10% value per day.

**Plagiarism:** You must submit work that is your own. 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 (<https://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.

**Course policies** Each member of this course is expected to maintain a:

- (i) professional and respectful attitude during all course activities, including classes, laboratories, tutorials, and other online activities.
- (ii) personal 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 (students registered with Accessibility Services requiring a class note-taker will have access to this accommodation)
- (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. The CHM1401 Teaching team will neither condone nor tolerate behaviour that undermines the dignity or self-esteem of any individual in this course and we 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](#).

**Accommodations:** Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability or health consideration that may require accommodations, please contact Accessibility Services at (416) 978 8060; <http://www.studentlife.utoronto.ca/as>, or contact Professor Murphy if you have questions. 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.

**Additional Supports and Services** The following are some important links to help you with academic and/or technical service and support:

- School of Graduate Studies' [Policies and Guidelines](#)
- Full library service and resources on conducting online research through University of Toronto Libraries [University Libraries Research](#)
- Resources on academic support from the [Academic Success Centre](#)
- Learner support at the [Writing Centre](#)
- Information for [Technical Support/Quercus Support](#)

### **Acknowledgement of Traditional Lands**

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.

Draft Aug 16, 2023