Physical & Environmental Sciences
UNIVERSITY OF TORONTO
SCARBOROUGH

EESC20H3 GEOCHEMISTRY
Fall term 2023

Lecture	Tutorial
Mondays 1-3pm in Room SW 311	Thursdays 12-1pm in Room AA 208
Instructor: Professor M.J. Simpson	**Instructor:** Atzin San Roman
Office: Room SY322	**Office:** Room SY315
Email: myrna.simpson@utoronto.ca	**Email:** atzin.sanroman@mail.utoronto.ca
Office Hours: to be announced	**Office Hours:** by appointment

COURSE DESCRIPTION: The course will cover fundamental aspects of chemical processes occurring at the Earth's surface. Terrestrial and aquatic geochemical processes such as: mineral formation and dissolution, redox, aqueous-solid phase interactions, stable isotopes, and organic geochemistry in the environment will be covered.

PREREQUISITES: CHMA10H3, CHMA11H3, and EESB15H3. **EXCLUSIONS:** EESD32H3, CHM210H, GLG202H, GLG351H. *All students must have the appropriate prerequisites for this course.*

GRADE BREAKDOWN:

Assignment 1	**15%**
Assignment 2	**15%**
Assignment 3	**15%**
Midterm exam	**20%**
Comprehensive final exam	**35%**

LATE WORK

Students are expected to submit assignments on the specified due date and time online using Quercus. The due dates for assignments are typically 2 weeks after the assignment has been posted. Late submissions will not be accepted.

COURSE LECTURE NOTES & LECTURE ATTENDANCE

There is no required textbook for this course and lecture notes will cover all topics in detail. Lecture notes (as a pdf) will be posted on Quercus. Examination material will include emphasized lecture material as discussed in either the lecture or tutorial sessions. Key points will be summarized in class using the "Checkpoint" slides.

PLAGIARISM

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).

University of Toronto Scarborough code of Behavior on Academic Matters states that "it shall be an offense for a student knowingly: to represent as one's own any idea or expression of an idea or work of another in any academic examination or term test or in connection with any other form of academic work, i.e., to commit plagiarism."

Any form of plagiarism will not be tolerated. Students suspected of plagiarism will be reported based on University policy and code of behavior (please refer to the University Calendar for more details).

COURSE CONSULTATION:

Course instructors are available for consultation. Prof. Simpson will hold weekly office hours via ZOOM – this is an open session for drop in and no appointment is required. A. San Roman will hold office hours via appointment only. Please send an email or message via Quercus to submit a request for an appointment (preferably 24 hours in advance of your intended meeting day and time). Please also consider asking your question(s) during the lecture or the tutorial section – in most cases, other students have the same questions, and your initiative can generate some excellent discussion and learning for the entire class. Both instructors welcome your questions!

ACCESSIBILITY NEEDS

The University of Toronto is committed to accessibility. If you require accommodations for a disability, or have any accessibility concerns about the course, the classroom or course materials, please contact The UTSC Accessibility Services as soon as possible: http://www.utsc.utoronto.ca/~ability/

WRITING SUPPORT

The University of Toronto Scarborough Writing Centre (http://utsc.utoronto.ca/twc/) offers writing support to all students in several forms. Students are advised to take advantage of their programs for assistance with scientific writing.

COURSE SCHEDULE

Week Number/Week Date	Lecture (Mondays 1-3pm)	Tutorial (Thursdays 12-1pm)
Week 1: September 11th	-Course introduction -Solution and solid phase chemistry	No Tutorial
Week 2: September 18th	-Solution and solid phase chemistry (continued)	Solution and Solid Phase Chemistry Calculations
Week 3: September 25th	-Solution and solid phase chemistry (continued) -Sorption phenomena and exchange reactions	Visual Minteq Demo Assignment #1 Questions
Week 4: October 2nd	**Assignment #1 Due** -Sorption phenomena and exchange reactions (continued)	Assignment 1 Review & Discussion
October 9th	***FALL SEMESTER READING WEEK (No Lecture or Tutorial)***	
Week 5: October 16th	-Reduction and oxidation (redox) processes	Assignment #2 Questions
Week 6: October 23th	**Assignment #2 Due** -Isotope geochemistry	Assignment 2 Return & Discussion
Week 7: October 30th	**MIDTERM EXAM (In class)**	No Tutorial
Week 8: November 6th	-Organic geochemistry and the global carbon cycle	Midterm Exam Review & Discussion
Week 9: November 13th	-Organic geochemistry and the global carbon cycle (continued)	Organic Geochemistry case study
Week 10: November 20th	-Geochemistry of organic pollutants, metals and inorganic compounds	Assignment #3 Questions
Week 11: November 27th	**Assignment #3 Due** -Geochemistry of organic pollutants, metals and inorganic compounds	Assignment 3 Review & Discussion
Week 12: December 4th	-Geochemistry of organic pollutants, metals and inorganic compounds	No Tutorial
To be announced (scheduled by the Registrar's Office)	**COMPREHENSIVE FINAL EXAM**	