

CONTACT INFORMATION:

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- Office hours: TBD

COURSE DESCRIPTION:

The importance of geology to health. This includes examining the effects of volcanic gases and dust and other aerosols; tracing the sources and impacts of metals and other naturally occurring geological materials in the Earth's hydrosphere and crust; geology and the bioaccumulation of metals; and distinguishing natural versus anthropogenic processes on the geochemical distribution of toxic material in the near-surface environment.

LEARNING OBJECTIVES:

The aim of the course is to introduce the student to the concept that the Earth, sometimes thought of as a living organism, introduces natural health risks into our lives. These risks are more subtle than volcanic eruption, landslides, tsunamis and cyclones/hurricanes. Simple things such as the dust we inhale can have a dramatic impact on our health. Although all of what we are made of comes from the periodic table of elements, and many of the elements are necessary for our well-being, deviations in the equilibrium amount of these elements can lead to health issues. The course theme could be expressed as "you are what you eat, breathe, drink and consume". As well, the student will learn a little of how the last 4.6 billion years of earth history has fashioned life on the planet.

RESOURCES:

- No text, but recommended material will be on loan in the Davis Library
- Course notes available on the Learn site. Notes will be posted the day before the lecture.
- Materials required: It will be helpful to have downloads of the notes on your laptop or printed to follow the lecture.

TOPICS:

There will be 3 lectures each week (50 minutes each). The following topics will be covered:

- Background/Overview
- Life, The Earth and Time (biogeochemistry)
- Geology – Hazards
- Gases and Dust (asbestos/volcanoes)
- Radioactivity (radon)
- Periodic Table – The Good, the Bad and the Very Bad (case histories)
 - Ca – Hard Water
 - Fe – Importance – Interference
 - Halides, I, F
 - Metals, As, Se and others
- Organic Compounds (hydrocarbons)
- Anthropogenic vs. Natural Contamination
- Techniques and Tools (analytical chemistry – isotopic tracers)

Detailed lectures are posted on Learn. NOTE: The last few weeks of the course will involve group presentations (20 minutes each).

ASSESSMENT:

1. Group presentation/term paper (20/20 = 40%) – Groups will consist of 4 people
2. Assignments:
 - a. Class Essay 10 or 15% (Your choice: Must be specified on the assignment when handed in). This is an individual assignment. This assignment is due by 4pm, Feb. 10, 2017. Topics and details will be discussed in class and posted on Learn.
 - b. Assignment 2 – chemistry related questions; 10 or 15% (Your choice: Must be specified on the assignment when handed in), due the last day of classes, April 3rd, 2017. This is also an individual project.
3. Final exam (April). Depends on weighting of #2a) and b) above (30-40%)

COMMITMENT EXPECTATIONS:

One aspect of the course is a large group project. Groups will consist of 4 persons. I expect all members of the group to actively participate. I will meet with each group several times during the term to help and review progress. Groups and group members will be expected to be in attendance at meetings and be prepared. Typical projects relate to aspects of Geological Impacts on Health. More details will be discussed in class.

ACADEMIC INTEGRITY:

[Office of Academic Integrity](#) provides relevant information for students, faculty and staff.

Academic Integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. Check www.uwaterloo.ca/academicintegrity/ for more information.

In this course, the following will be considered unacceptable

1. Having or sharing hard copies or digital copies of laboratories completed in previous years
2. Having or sharing hard copies or digital copies of group projects completed in previous years
3. Having or sharing hard copies or digital copies of lab quizzes or the lecture midterm from previous years
4. Re-creating test questions and answers without the express permission of the course instructor
5. Obtaining, distributing or receiving unauthorized academic material (old quizzes, exams and projects) without the express consent of the course instructor
6. Sharing unauthorized course-related materials (old quizzes, exams and projects) via hard-copy, email, social media or LEARN
7. Using LEARN email lists to sell or distribute unauthorized academic material

Grievance: Students, who believe that a decision affecting some aspect of their university life has been unfair or unreasonable, may have grounds for initiating a grievance. Students should read [Policy #70](#), Student Petitions and Grievances, Section 4. When in doubt, students must contact the department's/school's administrative assistant who will provide further assistance.

Plagiarism: Plagiarism is the act of directly copying material from another source word-for-word without acknowledging (citing) the source. Copying material from another student word-for-word (collusion) also constitutes plagiarism. It is unacceptable to claim another person's words as your own. Acts of plagiarism are not tolerated at the University of Waterloo and are subject to disciplinary action according to Policy 71, Student Discipline (see below). If you have not already done so, it is strongly recommended that you take the Academic Integrity Tutorial at <http://www.lib.uwaterloo.ca/ait/>.

Plagiarism detection software (Turnitin) will be used to screen the final written group report you hand in in this course. This is being done to verify that use of all materials and sources in assignments is documented. In the first week of the term, details will be provided about arrangements and alternatives for the use of Turnitin in this course. Students will have access to Turnitin before submitting their assignments in order to check they are employing appropriate citation practices. If you do not wish to have your work submitted to Turnitin, you need to inform Shaun Frape by Friday, January 27th, 2017. At that time, reasonable options will be discussed between the student and Shaun Frape as to what alternative arrangements will be made.

Discipline: Students are expected to know what constitutes academic integrity, to avoid committing academic offenses, and to take responsibility for their actions. Students who are unsure whether an action constitutes an offense, or who need help in learning how to avoid offenses (e.g., plagiarism, cheating) or

about 'rules' for group work/collaboration should seek guidance from the course instructor, academic advisor, or the Associate Dean of Science for Undergraduate Studies. For information on categories of offenses and types of penalties, students should refer to [Policy #71](#), Student Discipline. For information on typical penalties, students should check [Guidelines for the Assessment of Penalties](#).

Appeals: A decision or penalty imposed under Policy 33 (Ethical Behavior), Policy #70 (Student Petitions and Grievances) or Policy #71 (Student Discipline) may be appealed, if there is a ground. Students, who believe they have a ground for an appeal, should refer to [Policy #72](#) (Student Appeals).

COURSE RULES/CONSIDERATIONS:

Changes to Course Outlines

Revised course outlines will be posted/provided, if course details change (e.g., topics covered). Course elements that will NOT change are the grading scheme and course elements related to evaluation.

Verification of Illness Forms (VIF's):

Science students should be aware that the only Verification of Illness forms (VIFs) accepted for accommodation for missed assessments will be those issued by the University of Waterloo's Health Services, when this service is open (<https://uwaterloo.ca/health-services/>). VIFs issued by walk-in clinics will not be accepted, except when obtaining a VIF from Health Services is not possible. If a student is sick on a weekend, during off-hours, while out of town or receiving ongoing care from a family physician or specialist, it is acceptable to provide documentation from other health service providers. Information should include (1) date of the physician assessment, (2) dates of illness, (3) level of incapacitation and (4) whether the diagnosis was made by the physician or based on description by the student.

Keeping the playing field level for all of our students is a priority. Students are reminded that obtaining a VIF under false pretenses is an academic offense. For tests and exams, a student found guilty of misrepresentation will receive a failing grade in the course and be suspended. Any questions concerning this policy can be directed to an undergraduate advisor in the Science Undergraduate Office.

Student travel plans not considered acceptable grounds for granting an alternative examination time. Only illness and extenuating circumstances (such as a death in the family) will be considered.

Students with Disabilities:

[AccessAbility Services](#), located in Needles Hall, Room 1401, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If students require academic accommodations to lessen the impact of their disability, they should register with AccessAbility Services at the beginning of each academic term.

The Writing Centre:

The Writing Centre works across all faculties to help students clarify their ideas, develop their voices, and write in the style appropriate to their disciplines. Writing Centre staff offer one-on-one support in planning assignments and presentations, using and documenting research, organizing and structuring papers, and revising for clarity and coherence.

You can make multiple appointments throughout the term, or drop in at the Library for quick questions or feedback. To book a 50-minute appointment and to see drop-in hours, visit www.uwaterloo.ca/writing-

centre. Group appointments for team-based projects, presentations, and papers are also available. The Writing Centre also provides many helpful workshops during the term, the schedule can be found under the “events” page <https://uwaterloo.ca/writing-centre/workshops>.

Please note that writing specialists guide you to see your work as readers would. They can teach you revising skills and strategies, but will not proof-read or edit for you. Please bring hard copies of your assignment instructions and any notes or drafts to your appointment.

Other issues:

Please read and be familiar with the university policies regarding service interruptions in LEARN. It is recommended you download all course content so you have a copy of it and can access it at all times. If LEARN goes down when an assignment is due, please email the assignment to the instructor.

Audio or video recording of the lectures is not allowed unless arranged through [AccessAbility Services](#).