



Physical & Environmental Sciences
UNIVERSITY OF TORONTO
SCARBOROUGH

WINTER 2022
GRADUATE COURSE OUTLINE

EES1704H Environmental Risk Assessment
Thursday, 630pm – 930pm
Room: TBC
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COURSE DESCRIPTION

This course introduces the principles of environmental (both human and ecological) toxicology and risk assessment. Study of the basic principles of toxicology, including routes of exposure, dose response, and target organ effects from exposure to environmental toxicants will be covered. The course presents the quantitative methods used to assess the human and ecological health risks associated with exposure to toxicants, focusing on the four major components of risk assessment - hazard identification, dose-response assessment, exposure assessment, and risk characterization. Risk communication and public consultation will also be addressed. The course will include an overview of Canadian regulations and policies and their impact on the practical realities facing practitioners, policy makers and stakeholders.

COURSE OBJECTIVES

The intent is to make this course a hands-on, practical course so that you are able to participate as a team member conducting human health and ecological risk assessment upon its completion.

SCHEDULE

Jan 11	Lecture 1 Lecture 2	History of Toxicology and Risk Assessment Risk Assessment 101
Jan 18	Lecture 3 Lecture 4	Principals of Toxicology Environmental Contaminants
Jan 25	Lecture 5 Lecture 6	Environmental Risk Assessment in Canada Environmental Site Assessment and Environmental Quality Guidelines
Feb 1	Lecture 7	Preliminary Quantitative Risk Assessment Working Examples of HHRA
Feb 8	Lecture 8 Lecture 9	Use of Toxicity Equivalency Factors (TEFs) – PAHs/PCBs/Dioxins Development of Toxicity Reference Values
Feb 15	Midterm	
Feb 22	Reading Week	
Mar 1	Lecture 10	Ontario Brownfield Risk Assessment

Mar 8	Lecture 11	Environmental Assessments and Risk Assessment
Mar 15	Lecture 12 Lecture 13	Ecological Risk Assessment Health Impact Assessment
Mar 22	Student Group Presentations	
Mar 29	Student Group Presentations	
Apr 5	Lecture 14	Risk Communication
Apr TBD	Final Exam	(Date TBD)

EVALUATION

Participation		10%	Participation (e.g., in-class, discussions)
Assignment	Feb 4	5%	Risk Assessment Calculations
Midterm	Feb 15	15%	Mid-term exam on concepts explored to-date in class.
Group Project	Presentations Mar 22/29	10%	The class will be divided into groups of 3-4 (depending on class size).
	Group Report Mar 29	30%	Each group will be assigned a chemical to explore its environmental toxicology, development of TRVs around the world, human and ecological considerations and a contaminated site issue which will require the development of appropriate remediation / risk management.
Final Exam	April (TBC)	30%	Final Exam

The evaluation will be carried out in accordance with the Graduate Grading and Evaluation Practices Policy (and how that policy is interpreted and applied in this Dept.)

<http://www.governingcouncil.utoronto.ca/Assets/Governing+Council+Digital+Assets/Policies/PDF/grading.pdf>

VERIFICATION OF ILLNESS

A **Verification of Illness** (also known as a “doctor’s note”) is temporarily not required. Students who are absent from academic participation for **any reason** (e.g., COVID, cold, flu and other illness or injury, family situation) and who require consideration for missed academic work should report their absence through the online absence declaration. The declaration is available on [ACORN](#) under the **Profile and Settings** menu. Students should also advise their instructor of their absence. Visit [COVID-19 Information for University of Toronto Students](#) page on the Vice-Provost, Students website for information on this and other frequently asked questions.

EMERGENCY PLANNING

Students are advised to consult the university’s preparedness site (<http://www.preparedness.utoronto.ca>) for information and regular updates regarding procedures relating to emergency planning.

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/>

We also suggest you also refer to the following University of Toronto Scarborough Library link:

<http://utsc.library.utoronto.ca/services-persons-disabilities>

PLAGIARISM

University of Toronto Code of Behaviour on Academic Matters states that "it shall be an offence 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."

For accepted methods of standard documentation formats, including electronic citation of internet sources please see the UofT writing website at <http://advice.writing.utoronto.ca/using-sources/documentation>.

The full Code of Behaviour regulations could be found from consulting

<https://www.sgs.utoronto.ca/policies-guidelines/academic-integrity-resources/>

WRITING AND ENGLISH LANGUAGE

As well as the faculty writing support, please see [English Language and writing support at University of Toronto](#) or the [Centre for Teaching and Learning](#) at UTSC.

The following is also useful:

Sylvan Barnett, *A Short Guide to Writing About Art*. 5-7th edition (New York: Harper-Collins, 1997)

William Strunk Jr., E.B. White. *The Elements of Style* (New York: MacMillan Publishing)

LATE WORK

All assignments are due at the specified time and date. Late submission will result in a 5% deduction (of each assignment's total grade) per business day, excluding weekends. In the case of illness or other special circumstance, notification should be given to the instructors and the Program Office as soon as possible and before the deadline in question.

Late work submitted after the final day of classes, is not acceptable without prior written permission from the Instructor.

READINGS

The following documents should be read as it will help you better understand course concepts.

- Health Canada, 2021. Federal Contaminated Site Risk Assessment in Canada, Part I: Guidance on Human Health Preliminary Quantitative Risk Assessment (PQRA), Version 3.0. Contaminated Sites Program. Safe Environments Directorate. Health Canada.
- Health Canada, 2021. Federal Contaminated Site Risk Assessment in Canada, Part II: Toxicity Reference Values (TRVs), Version 3.0. Contaminated Sites Program. Safe Environments Directorate. Health Canada.

The following reading list is not mandatory but will be useful throughout the course and as general risk assessment references.

- Ontario Ministry of the Environment, 2011. Rationale for the Development of Soil and Ground Water Standards for Use at Contaminated Sites in Ontario. Ministry of the Environment Standards Development Branch. April 15, 2011.
- Canadian Council of Ministers of the Environment, 2020. Ecological Risk Assessment Guidance Document. PN 1585 ISBN 978-1-77202-044-1 PDF.