Physical & Environmental Sciences
UNIVERSITY OF TORONTO
SCARBOROUGH

EES1128: Biophysical Interactions in the Managed Environment
Department of Physical and Environmental Sciences
University of Toronto Scarborough
Fall 2021

Instructor: Prof. Marney Isaac
Office: EV462
Email: marney.isaac@utoronto.ca
Teaching assistant: Stephanie Gagliardi (stephanie.gagliardi@utoronto.ca)
Virtual Office hours: Wednesday 11-12pm

LECTURES/LABS: Wed: 12-2 pm [synchronous (live) online lectures on Zoom via our Quercus course site]

COURSE DESCRIPTION AND OBJECTIVES

This course will focus on biophysical interactions at the advanced level, incorporating specialized concepts on plant-soil relationships, biogeochemical cycles, and ecosystem functioning in agroecosystems and forest ecosystems. By the end of this course, students will have an understanding of the complexities and dynamics in managed environments, specifically soil fluxes including decomposition and mineralization processes, plant growth and nutrition, ecosystem structure and function, and production-diversity relationships.

REQUIRED READING

I will post a reading list following the Introduction lecture and these readings will be the basis of the weekly lectures and discussions. Readings will be made available on UTSC *ereserve*.

LECTURE SCHEDULE (12 to 1pm)

Lecture	Date	Lecture topic
1	Sept. 15	Introduction
2	Sept. 22	Litter decomposition
3	Sept. 29	Nutrition: nitrogen
4	Oct. 6	Nutrition: phosphorus
5	Oct. 13	Plant ecophysiology and plant functional traits
6	Oct. 20	Plant-soil interactions
7	Oct. 27	System structure and function
8	Nov. 3	Guest lecture
9	Nov. 10	Production and diversity relationships
10	Nov. 17	Managed environments and ecosystem services
11	Nov. 24	Presentations
12	Dec. 1	Presentations

LABORATORIES (1 to 2pm)

Lab	Date	Topic
1	Sept. 22	Measurement of litter decomposition (online demo)
2	Sept. 29	Field site tour (in person)
3	Oct. 6	Measurement of nitrogen mineralization rates (online demo)
4	Oct. 13	Biomass quantification and soil profile development (online demo and video)
5	Oct. 20	Stats session (online)
6	Oct. 27	Librarian session on research skills (online)

The Laboratory Manual will be provided in advance of each lab session.

EVALUATION

The evaluation scheme is designed to meet the objectives of this course. Comprehension of the lecture material and readings, in both general and specific form, will be evaluated by a major paper and a presentation. Analytical skills will be evaluated with experiment reports. Further instructions on the reports, paper and presentation will be provide during the first few lectures of the semester. Weights are as follows:

Department of Physical and Environmental Sciences, 1265 Military Trail, Toronto, Ontario M1C 1A4 Canada
Phone: 416-287-7205 Fax: 416-287-7204 Email: csioulis@utsc.utoronto.ca
http://www.utsc.utoronto.ca/~physsci/

Proposal: 10%
Students are expected to hand in an outline on the order of one page on their major paper theme and objectives by the 6th lecture.

Laboratory reports: 30%
Two reports, based on Lab 1 and 3, will require you to review and assess a method(s) or technique(s) used in the study of biogeochemical cycles covered in laboratories. These reports are worth 15% each.

Major paper: 40%
The final term paper will be on the order of 12-15 pages of double-spaced text. The paper will be on a topic of your choosing within one of the themes suggested in the reading list or a topic pre-approved by the instructor.

Seminar presentation: 20%
Presentations based on material in the major papers will be presented orally (15 minutes) during the last two lectures.

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

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: https://www.utsc.utoronto.ca/ability/welcome-accessability-services

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PLAGIARISM

University of Toronto code of Behaviour 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."

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

The full Code of Behaviour regulations could be found from consulting
https://www.sgs.utoronto.ca/policies-guidelines/academic-integrity-resources/

Office hours

I am available for office hours every week. You are invited to attend (VIRTUALLY) office hours to discuss the lecture material, your major paper topic, the Environmental Science program at UTSC and/or the state of the world in general. This time is dedicated to your interests and questions, so please make use of it. The teaching assistant in this course also provides office hours for you, and your questions and your interests. I encourage you to make full use of this time.

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