Faculty of Arts and Science - School of Environment

ENV335H1 S

Environmental Design

Winter 2025 Syllabus

Course Meetings

ENV335H1 S

Section	Day & Time
LEC0101	Monday, 1:00 PM - 4:00 PM

Refer to ACORN for the most up-to-date information about the location of the course meetings.

Lectures will be in person every Monday from 1-4pm in room B142 in the Earth Science (ES) building (see for [directions](#)).

Course Contacts

Teaching Assistant: Garrett Morgan
Email: garrett.morgan@mail.utoronto.ca

Instructor: Monique Lizardo
Email: monique.lizardo@mail.utoronto.ca
Office Hours and Location: Wednesdays from 1:00–4:00 PM, available online or in person by appointment. Please provide at least 24 hours' notice to schedule office hours. For alternative times, email monique.lizardo@mail.utoronto.ca and garrett.morgan@mail.utoronto.ca with three proposed dates and times.
Additional Notes: Please allow 24-48 hours for response during regular business hours. Please include course code in subject line and full student name and group member names in message.

Course Overview

Environmental design, in the context of this course, refers to design strategies that account for the ability of supporting ecosystems to continue to meet human needs and those of other lifeforms without diminishing biological diversity or environmental quality. This course takes a hands-on approach to investigating several environmental design issues: climate-responsive design, energy consumption, health and comfort, natural lighting and ventilation, and water management. Students will build up a design of a net-zero carbon residential building through several instructive design exercises during the semester, including hands-on measurement and calculation activities.

Environmental design, in the context of this course, refers to design strategies that account for the ability of supporting ecosystems to continue to meet human needs and those of other lifeforms without diminishing biological diversity or environmental quality. This course takes a

hands-on approach to investigating several environmental design issues: climate-responsive design, energy consumption, health and comfort, natural lighting and ventilation, and water management. Students will build up a design of a net-zero carbon residential building through several instructive design exercises during the semester, including hands-on measurement and calculation activities.

Course Learning Outcomes

1. Understand the impacts of architectural design on operational and embodied energy and carbon emissions.
2. Predict and describe the impacts of architectural design on energy consumption and human health and comfort.
3. Analyze a subset of environmental design issues in architecture based on measured data, mathematical estimations, or physically-based performance simulations.
4. Make recommendations towards the design of a net-zero energy (or carbon) housing development based upon novel analysis (group analysis project).

Prerequisites: Completion of 8.0 credits including ENV221H1/ENV222H1. Students who do not meet the prerequisites are encouraged to contact the Undergraduate Associate Director.
Exclusions: None
Recommended Preparation: None
Credit Value: 0.5

Course Materials

Laptop, writing material, and a Miro account are required for this course.

CAD software such as Revit, Rhino, AutoCAD are strongly recommended. Please explore free student versions and be mindful of trial duration limitations.

Marking Scheme

Assessment	Percent	Details	Due Date
First Principles Thinking for Net Zero Design 1	10%	Students will collaborate to apply first principles thinking to critically assess conventional assumptions about net zero residential projects, uncover overlooked aspects, and identify key focus areas for exploration. Through group and inter-group collaboration, ideas will be added, combined, and refined, transforming the class into a dynamic learning ecosystem.	No Specific Date

Assessment	Percent	Details	Due Date
First Principles Thinking for Net Zero Design 2	10%	Students will collaborate to apply first principles thinking to critically assess conventional assumptions about net zero residential projects, uncover overlooked aspects, and identify key focus areas for exploration. Through group and inter-group collaboration, ideas will be added, combined, and refined, transforming the class into a dynamic learning ecosystem.	No Specific Date
First Principles Thinking for Net Zero Design Reflection 1	5%	A reflection of insights, findings, and ideas developed through First Principles Thinking.	No Specific Date
First Principles Thinking for Net Zero Design Reflection 2	5%		No Specific Date
Net Zero Residential Design Project Part 1	25%	In class presentation	No Specific Date
Net Zero Residential Design Project Part 2	30%	In class presentation	No Specific Date
Engagement	10%		No Specific Date
Quiz	5%		2025-03-11

Late Assessment Submissions Policy

A penalty of 5% of the total mark for the assignment will be applied per day (including weekends and holidays)

Course Schedule

Week	Description
Week 1 Jan 6	Intro, circularity, design for disassembly
Week 2 Jan 13	Climate responsive campus guest lecture

Week 3 Jan 20	LEED, WELL, green matrices
Week 4 Jan 27	Climate responsive design, potential guest lecturer
Week 5 Feb 3	Net zero residential design presentations part 1
Week 6 Feb 10	Net zero residential design presentations part 1
Week 7 Feb 17	Reading week, no class
Week 8 Feb 24	Health and comfort, natural lighting, ventilation, water management,
Week 9 Mar 3	Calculating carbon emissions
Week 10 Mar 10	Housing needs; social, political, economic, and environmental sustainability
Week 11 Mar 17	Open lecture
Week 12 Mar 24	Net zero residential design presentations part 2
Week 13 Mar 31	Net zero residential design presentations part 2

Policies & Statements

Late/Missed Assignments

This item is listed here to remind you to include your late/missed assignment policy; if you have late penalties, you are required to publish them in your syllabus. Please see the A&S Academic Handbook (https://www.artsci.utoronto.ca/faculty-staff/teaching/academic-handbook) sections

on missed term work (Section 4.7), late term work and extensions (section 4.8), and missed term tests (Section 5.3) for more information.

Plagiarism Detection Tool

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).

Religious Accommodations

As a student at the University of Toronto, you are part of a diverse community that welcomes and includes students and faculty from a wide range of cultural and religious traditions. For my part, I will make every reasonable effort to avoid scheduling tests, examinations, or other compulsory activities on religious holy days not captured by statutory holidays. Further to University Policy, if you anticipate being absent from class or missing a major course activity (such as a test or in-class assignment) due to a religious observance, please let me know as early in the course as possible, and with sufficient notice (at least two to three weeks), so that we can work together to make alternate arrangements.

Students with Disabilities or Accommodation Requirements

Students with diverse learning styles and needs are welcome in this course. If you have an acute or ongoing disability issue or accommodation need, you should register with Accessibility Services (AS) at the beginning of the academic year by visiting https://studentlife.utoronto.ca/department/accessibility-services/. Without registration, you will not be able to verify your situation with your instructors, and instructors will not be advised about your accommodation needs. AS will assess your situation, develop an accommodation plan with you, and support you in requesting accommodation for your course work. Remember that the process of accommodation is private: AS will not share details of your needs or condition with any instructor, and your instructors will not reveal that you are registered with AS.

Academic Integrity

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters (https://governingcouncil.utoronto.ca/secretariat/policies/code-behaviour-academic-matters-july-1-2019). If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, please reach out to me. Note that you are expected to seek out additional information on academic integrity from me or from other institutional resources. For example, to learn more about how to cite and use source material appropriately and for other writing support, see the U of T writing support website at http://www.writing.utoronto.ca. Consult the Code of Behaviour on Academic Matters for a complete outline of the University's policy and expectations. For more information, please see A&S Student Academic Integrity (https://www.artsci.utoronto.ca/current/academic-advising-and-

support/student-academic-integrity) and the University of Toronto Website on Academic Integrity (https://www.academicintegrity.utoronto.ca).

Specific Medical Circumstances

If you become ill and it affects your ability to do your academic work, consult me right away. Normally, I will ask you for documentation in support of your specific medical circumstances. This documentation can be an Absence Declaration (via ACORN) or the University's Verification of Student Illness or Injury (VOI) form. The VOI indicates the impact and severity of the illness, while protecting your privacy about the details of the nature of the illness. If you cannot submit a VOI due to limits on terms of use, you can submit a different form (like a letter from a doctor), as long as it is an original document, and it contains the same information as the VOI (including dates, academic impact, practitioner's signature, phone and registration number). For more information on the VOI, please see http://www.illnessverification.utoronto.ca. For information on Absence Declaration Tool for A&S students, please see https://www.artsci.utoronto.ca/absence. If you get a concussion, break your hand, or suffer some other acute injury, you should register with Accessibility Services as soon as possible.

Accommodation for Personal Reasons

There may be times when you are unable to complete course work on time due to non-medical reasons. If you have concerns, speak to me or to an advisor in your College Registrar's office; they can help you to decide if you want to request an extension or other forms of academic consideration. They may be able to email your instructors directly to provide a College Registrar's letter of support and connect you with other helpful resources on campus.

Quercus Info (if using)

This Course uses the University's learning management system, Quercus, to post information about the course. This includes posting readings and other materials required to complete class activities and course assignments, as well as sharing important announcements and updates. New information and resources will be posted regularly as we move through the term. To access the course website, go to the U of T Quercus log-in page at https://q.utoronto.ca. SPECIAL NOTE ABOUT GRADES POSTED ONLINE: Please also note that any grades posted are for your information only, so you can view and track your progress through the course. No grades are considered official, including any posted in Quercus at any point in the term, until they have been formally approved and posted on ACORN at the end of the course. Please contact me as soon as possible if you think there is an error in any grade posted on Quercus.

Attendance

This item is listed here to remind you that you may wish to include your attendance policy, if you have one, in your syllabus. For more information, see Section 3.1 in the A&S Academic Handbook (https://www.artsci.utoronto.ca/faculty-staff/teaching/academic-handbook#CourseClassroomProcedures).