UNIVERSITY OF CALGARY
SCHOOL OF ARCHITECTURE,
PLANNING AND LANDSCAPE

Fall 2023

Course Number	e.g. ARCH 500	**Classroom**	Downtown - CBDL
Course Name	Sustainability in the Built Environment		
Pre/Co-Requisites			
Instructor	James Furlong	**Office Hours/Location**	By Appointment
	Email: jfurlong@mcw.com and james.furlong@UCalgary.ca	**Phone: 403.803.9476**	
Class Dates	Tuesdays and Thursdays, Sept 5 – Dec 6, 9:00am to 10:30am Other asynchronous assignments due during Sept 5 – Dec 6, 2023		
Instructor Email Policy	Please note that all course communications must occur through your @ucalgary email, and I will respond to emails sent via student's @ucalgary emails within 48 hours (of weekdays- not including weekends). Please have ARCH 500 in the subject line. **Please copy both my work and UCalgary emails for fastest response times. CC all of the the TAs too please – they may respond faster than I will!**		
Name and Email of Teaching Assistant(s)	Kevin Kremer kevin.kremer@ucalgary.ca Afrin Islam afrin.islam@ucalgary.ca Ayoyimika Edun ayoyimika.edun@ucalgary.ca Olivia Alarcon Herrera olivia.alarconherrer@ucalgary.ca		

Course Description:

https://contacts.ucalgary.ca/info/evds/courses/f23/ARCH500?destination=courses%2Ff23

Sustainable development has historically been defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, 1987). Sustainability as a concept and practice proves complex, challenging, and vital for our society. It is an increasingly critical topic for practicing architects, developers, urban planners, and landscape architects. This course is structured to present a wide array of viewpoints on key ideas concerning sustainability in the built environment. The course will be presented through lectures, international and Canadian case studies, guest lectures, and individual & group assignments and presentations aimed at gaining a wide and rich understanding of this complicated concept. Guest lectures will be delivered by experienced professionals versed and active in the realm of sustainable design. Students are expected to critically consider the range of approaches and trade offs being discussed in our classes and to begin to formulate, delineate & articulate their own positions. But most of all, we hope to instill a sense of hope and optimism – there are a wide array of sustainable solutions that exist today, and while the built

environment is a major contributor to environmental degradation, it need not be! Past students have commented that taking the course has helped quell their individual climate anxiety.

Content: Selected Topic Areas

• Overview of Sustainability - especially considering Architecture & Environmental Design

• Climate change| Human effects| GHG emissions

• Sustainable development| Sustainable site planning and analysis

• Energy | Resources

• Sustainable neighborhood design| Natural flow |Ecology | Landscapes

• Sustainable building initiatives (LEED, Living Building Challenge, PassiveHaus, NZEB, Decarbonization)

• Refurbishment/retrofits for sustainability

• Building materials & building construction and their environmental impact

• Sustainable building services| Smart technologies

• Measuring sustainability| Environmental Quality | Integration

Course Hours: 3 units

Course Learning Outcomes:

Upon completion of this course, students will know and be able to:

1. Demonstrate understanding of theories, principles and practices focused on sustainability in the built environment;
2. Provide straightforward and practical examples of how sustainability can be achieved for the built environment;
3. Analyze site and neighborhood designs according to first principles for planning sustainable and efficient neighborhoods;
4. Analyze sustainability measures in buildings, including energy and resource efficiency;
5. Formulate personal and professional positions concerning sustainability.

Learning Resources:

Suggested readings, textbooks and learning materials:

Kazimee Bashir, Sustainable Urban Forms: Theory, Design and Application, First edition, Cognella Academic Publishing, 2018.
Barton, H., Grant, M., Guise, R. , Shaping Neighbourhoods: For Local Health and Global Sustainability, Routledge; 2 edition, 2010.
Alison Cotgrave; Mike Riley Total Sustainability in the Built Environment, Palgrave Macmillan, 2012.
Lynch, Kevin; Hack, Gary (1962). Site Planning. MIT Press. (2nd ed. 1971; 3rd ed. 1984)

In addition, list of readings related to selected topics will be posted periodically on D2L

Technology requirements (D2L etc.):

In order to successfully engage in their learning experiences at the University of Calgary, students are required to have reliable access to the following technology:

- *A computer with a supported operating system, as well as the latest security, and malware updates;*
- *A current and updated web browser;*
- *Webcam (built-in or external);*
- *Microphone and speaker (built-in or external), or headset with microphone;*
- *Current antivirus and/or firewall software enabled;*
- *Broadband internet connection*
  Student IT Resources

Assessment Components:

Assessment Method	Description	Weight	Aligned Course Learning Outcome
Project	*Site Planning + Design (Group + individual component):* *The term project will be completed in teams, with an individual component making up 15% of the total grade. The project consists of an exercise in applying sustainable design (details will be provided), to sites and buildings. The project aligns with the course outcomes 1-5, and will be formed of 3 parts:* *1. Project preparation including initial concepts and directives (with brief midterm presentation and report submitted on D2L)* *2. A final project presenting all the analysis, with submitted report (on D2) and full class presentation by groups.* *3. An individual submission discussing the part done by each member from the group, and the perspective of this individual on the designed attained, and lessons learned from this (details will be provided in the project).*	Group Component: 25% Individual Component: 15% Total: 40%	1-5
Project Presentation	*Group presentation of the project*	15%	1-5

Sustainability Framework Paper (Individual)	*The paper is an individual assignment. It covers all outcomes identified above. Students are required to discuss and analyze a specific sustainability issue. Details will be provided early in the term.*	30%	1-5
Student participation	*Participation in this class, including class discussions, giving feedback on presentations of other students (peer review for projects), group work in class, and Thread discussions on D2L will form 15% of the total student grade. This participation has proven to be very important in this class, as it contributes significantly to enriching the experience of all students. Please have the courage to ask questions in front of your peers!*	15%	

Assessment and Evaluation Information

Attendance and Participation Expectations:

Attendance is mandatory. Please email the TAs and myself *in advance* of missing a class.

Guidelines for Submitting Assignments:

See topic areas and detailed class schedule. Generally due by 8 am on class days on D2L.

Final Examinations:

None.

Expectations for Writing (https://www.ucalgary.ca/pubs/calendar/current/e-2.html):

This is a master course. As such concise academic technical English is critical (strong opening sentence for each paragraph, citations where merited, strong evidence with supported conclusions and insights). I accept the use of AI to help craft reports; however, most AI lacks the ability to draw "ah-ha" or "so what" insights/conclusions. They are very good at spitting out facts but not drawing insightful conclusions, nor providing good/relevant citations. You will likely fail this course if you rely on un-curated AI to do your work for you, and we are most interested in hearing your thoughts and ideas in your own voice.

Late Assignments:

-2% for every 24 hours of delay

Criteria that must be met to pass:

Grading Scale:

Grade	Grade Point Value	4-Point Range	Percent	Description
A+	4.00	4.00	95-100	Outstanding - evaluated by instructor
A	4.00	3.85-4.00	90-94.99	Excellent - superior performance showing comprehensive understanding of the subject matter
A-	3.70	3.50-3.84	85-89.99	Very good performance
B+	3.30	3.15-3.49	80-84.99	Good performance
B	3.00	2.85-3.14	75-79.99	Satisfactory performance
B-	**2.70**	**2.50-2.84**	**70-74.99**	**Minimum pass for students in the Faculty of Graduate Studies**
C+	2.30	2.15-2.49	65-69.99	All final grades below B- are indicative of failure at the graduate level and cannot be counted toward Faculty of Graduate Studies course requirements.
C	2.00	1.85-2.14	60-64.99	
C-	1.70	1.50-1.84	55-59.99	
D+	1.30	1.15-1.49	50-54.99	
D	1.00	0.50-1.14	45-49.99	
F	0.00	0-0.49	0-44.99	

A student who receives a "C+" or lower in any one course will be required to withdraw regardless of their grade point average (GPA) unless the program recommends otherwise. If the program permits the student to retake a failed course, the second grade will replace the initial grade in the calculation of the GPA, and both grades will appear on the transcript

The School of Architecture, Planning and Landscape will not permit the Flexible Grade Option (CG Grade) for any course offered by the School.
https://www.ucalgary.ca/pubs/calendar/current/f-1-3.html

CACB Student Performance Criteria

The following CACB Student Performance Criteria will be covered in this course at a primary level (other criteria will be covered at a secondary level): A1. Critical Thinking Skills; A6. Human Behaviour, B3. Site Design, and B4. Sustainable Design. *(see CACB SPC matrix for further details)*

Topic Areas & Detailed Class Schedule

Course Schedule Date	Topic	Assignments/Due Dates
Sept 5 - 8	Introduction to sustainability: overview of sustainability, global climate change, human activities and their effects, GHG emissions, universal efforts to increase sustainability- introduce term project.	
Sept 11 - 15	Three pillars of sustainability; Concepts of sustainable development and sustainable urbanism; Introduction to sustainable site planning. Project discussion.	September 12 at 8 am: Submitting teams and neighbourhoods.
Sept 18 - 22	Site planning, Principles of site analysis, Improving sustainability of a site (e.g. stormwater, reducing site disturbance, vegetation)	
Sept 25 – September 29	Sustainable Sites (ctd)– Examples of sustainable sites and case studies. Introducing individual sustainability paper.	
Oct 2 – 6	Introduction to alternative Energy (Solar, wind, Hydro, biofuel, etc.); Introduction to sustainable buildings standards: green buildings vs. sustainable buildings**.**	
Monday October 9	Thanksgiving Holiday	
Oct 10 - 13	Energy efficiency and sustainability; Passive House; Net Zero Energy Buildings (NZEB), Examples of different types of NZEB;	
Oct 16 - 20	Building envelope effect and energy efficiency measures, renewable energy integration, sustainable building services, construction and materials, integrated design.	Term Project part 1 submission (on D2L), **by 8 am October 17, before class**
Oct 23 - 27	Energy use and GHG emissions,- Life Cycle Assessment (LCA);	

	Measuring sustainability; Critical comparison of sustainability frameworks. Guest Lecture October 26.	
October 30 - Nov 3	Real Life Project Examples; Open Discussion/Questions and Answers for Term Assignments. Guest Lecture November 2.	
Nov 6 - 10	Fall SAPL Block week	
Nov 12 – 18	Fall Term Break No Classes	
Nov 13	Remembrance Day Observed	
Nov 20 - 24	Desk Critiques – chance to review term projects (sign up sheet for times).	
Nov 27 – Dec 1	Term Project- Students' Presentations	Term Project and presentation submission (on D2L), **by 8 am, November 28, before class**
Dec 4 – 6	December 5 – Term Project Students' Presentations – Continued- last day of classes	December 7, Individual Paper submission (on D2L), **11:59pm**
Indicate the following dates: • If applicable, dates, times and locations of all approved class activities scheduled outside of regular course hours		

University of Calgary Policies and Supports

ACADEMIC ACCOMMODATION

It is the student's responsibility to request academic accommodations according to the University policies and procedures listed below. The student accommodation policy can be found at: https://www.ucalgary.ca/legal-services/university-policies-procedures/student-accommodation-policy

Students needing an accommodation because of a disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities:https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Accommodation-for-Students-with-Disabilities-Procedure.pdf. Students needing an accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, preferably in writing, to their instructor (contact information on first page above).

SAS will process the request and issue letters of accommodation to instructors. For additional information on support services and accommodations for students with disabilities, visit www.ucalgary.ca/access/ .

ACADEMIC MISCONDUCT

Academic Misconduct refers to student behavior which compromises proper assessment of a student's academic activities and includes: cheating; fabrication; falsification; plagiarism; unauthorized assistance; failure to comply with an instructor's expectations regarding conduct required of students completing academic assessments in their courses; and failure to comply with exam regulations applied by the Registrar.

For information on the Student Academic Misconduct Policy and Procedure please visit: https://www.ucalgary.ca/legal-services/university-policies-procedures/student-academic-misconduct-policy
Additional information is available on the Academic Integrity Website at https://ucalgary.ca/student-services/student-success/learning/academic-integrity.

COPYRIGHT LEGISLATION:

All students are required to read the University of Calgary policy on Acceptable Use of Material Protected by Copyright (https://www.ucalgary.ca/legal-services/university-policies-procedures/acceptable-use-material-protected-copyright-policy) and requirements of the copyright act (https://laws-lois.justice.gc.ca/eng/acts/C-42/index.html) to ensure they are aware of the consequences of unauthorised sharing of course materials (including instructor notes, electronic versions of textbooks etc.). Students who use material protected by copyright in violation of this policy may be disciplined under the Non-Academic Misconduct Policy (https://www.ucalgary.ca/pubs/calendar/current/k.html).

INSTRUCTOR INTELLECTUAL PROPERTY

Course materials created by instructors (including presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the instructor. These materials may NOT be reproduced, redistributed or copied without the explicit consent of the instructor. The posting of course materials to third party websites such as note-sharing sites without permission is prohibited. Sharing of extracts of these course materials with other students enrolled in the course at the same time may be allowed under fair dealing.

FREEDOM OF INFORMATION AND PROTECTION OF PRIVACY

Student information will be collected in accordance with typical (or usual) classroom practice. Students' assignments will be accessible only by the authorized course faculty. Private information related to the individual student is treated with the utmost regard by the faculty at the University of Calgary.

SEXUAL AND GENDER-BASED VIOLENCE POLICY

The University recognizes that all members of the University Community should be able to learn, work, teach and live in an environment where they are free from harassment, discrimination, and violence. The University of Calgary's sexual violence policy guides us in how we respond to incidents of sexual violence, including supports available to those who have experienced or witnessed sexual violence, or those who are alleged to have committed sexual violence. It provides clear response procedures and timelines, defines complex concepts, and addresses incidents that occur off-campus in certain circumstances. Please see the policy available at https://www.ucalgary.ca/legal-services/university-policies-procedures/sexual-and-gender-based-violence-policy .

UNIVERSITY STUDENT APPEALS OFFICE

If a student has a concern about a grade that they have received, they should refer to Section I of the Undergraduate Calendar (https://www.ucalgary.ca/pubs/calendar/current/i-3.html) which describes how to have a grade reappraised. In addition, the student should refer to the SAPL's Procedure for reappraisal of grades

OTHER IMPORTANT INFORMATION

Please visit the Registrar's website at: https://www.ucalgary.ca/registrar/registration/course-outlines for additional important information on the following:

- Wellness and Mental Health Resources
- Student Success
- Student Ombuds Office
- Student Union (SU) Information
- Graduate Students' Association (GSA) Information
- Emergency Evacuation/Assembly Points
- Safewalk