Course Number	ARCH 690	Classroom	Zoom
Course Name	Special Topics in Architecture: Design Decisions: environmental impact intensity of materials and energy flows and processes		
Pre/Co-Requisites			
Instructor	Dr. Getachew Assefa	**Office Hours/Location**	By appointment
	Email: gassefa@ucalgary.ca	**Phone: 403 616 1527**	
Class Dates	Mandatory real-time Zoom classes: Tuesdays and Thursdays 11:00am to 12:30pm. The scheduled time on Thursday will be also used for questioning regarding assignments. See course schedule on Page 4 for further detail)		
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.		
Name and Email of Teaching Assistant(s)	N/A		

Course Description

Design and planning actions have influence on how much and what types of materials and energy and where will be moved/extracted, processed, used, and eventually wasted or recovered. The choices made significantly affect the overall life cycle performance of the designed objects. Rating systems, design guidance and increased consumer awareness are increasingly considering life cycle performance and benchmarking of what should be favored for manufacturing, development and purchasing decisions. Two examples of new trends are the growing use of life cycle based environmental product declarations (EPDs) of building/construction materials; and the new ISO standard under development aiming to enable the use of EPDs at construction works using building information modeling (BIM).

This course on LCA in design, offered for senior undergraduate and graduate design students develop the skill of understanding the implications of the decisions they make at different levels of product and service design and development.
This course explores:
- Life cycle assessment of materials, products, energy, buildings, cities and landscapes
- LCA and Circular economy
- Opportunities and challenges in early design stages
- Design tools, LCA tools and data

•   Product category rules and Environmental product declarations •   LCA, standards and rating systems **Course Hours:** 3 units

Online Delivery

Lecture videos will be posted on D2L for asynchronous learning. The live Zoom sessions during the timetabled periods as indicated in the course schedule will be used for question and answer, for exercises, discussing assignment and for follow up assignment progress. Students are required to review the lecture videos and do related readings and attend synchronous Zoom sessions**.** If unable to participate live due to unforeseen circumstances, inform the instructor in advance to work out an alternative participation activity.

Course Learning Outcomes

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

1. Understand the overall purpose and principles of LCA.

2. Describe the content and explain the purpose of the different steps of LCA.

3. Carry out a complete LCA of a defined system based on the ISO standard for LCA.

4. Write an LCA report complying with guidelines and terminologies of the ISO standard

5. Discuss design applications and limitations of LCA.

6. Understand how a third-party critical review of LCA is done.

Learning Resources

Recommended textbook:

Matthews, H. S., Hendrickson, C. T., & Matthews, D. H. (2015). Life cycle assessment: Quantitative approaches for decisions that matter. (e-book available for download for free at: https://www.lcatextbook.com/

Software: Autodesk Revit 2020 with Tally® as Add-in

Technology requirements: 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

Most current laptops will have a built-in webcam, speaker and microphone.

Additional Classroom Conduct and Related Information

Guidelines for Zoom Sessions in Online Classes

Students are expected to participate actively in all Zoom sessions and to turn on their webcam. Please join our class in a quiet space that will allow you to be fully present and engaged in the Zoom sessions. Students must behave in a professional manner during the session. Students, employees, and academic staff are also expected to demonstrate behaviour in class that promotes and maintains a positive and productive learning environment.

Assessment Components – All assignments are individual

Assessment Method	Description	Weight	Aligned Course Learning Outcome
Assignment 1	Project - goal and scope	10	All
Assignment 2	Material and energy: inventory	10	All
Assignment 3	Full life cycle assessment covering materials and energy	20	
Assignment 4	Synthesis, analysis and interpretation of results based on Assignments 1-3	30	All
Quizzes	5 quizzes: 4 best will be considered	20	All
Class Participation	Active attendance of sessions	10	All

Assessment and Evaluation Information

Attendance and Participation Expectations: students are expected to attend synchronous sections and participate actively in group assignments.

Guidelines for Submitting Assignments: assignment should be submitted before the end of the day (before midnight) of the deadline date through D2L Dropbox.

Final Examinations: there is no scheduled final examination for this course other than the quizzes.

Expectations for Writing (https://www.ucalgary.ca/pubs/calendar/current/e-2.html): students are expected to write assignments using understandable English with clear structure using appropriate headings following assignment instructions citing sources used properly and consistently. Clearly show names of students. Write in single spaced 12pts times new roman or equivalents.

Late Assignments: assignments submitted late 1 mark per day late will deducted for each late submission of assignment.

Criteria that must be met to pass: Students are required to pass the total of course components to successfully pass the course.

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.

Topic Areas & Detailed Class Schedule

Course Schedule Date	Topic	Assignments/Due Dates
September 7	**L1: Introduction: life cycle assessment and design decisions, Goal and Scope**	
September 9	Project session	
September 14	**L2: Life cycle inventory: data and methodological aspects**	
September 16	Project session	
September 21	**L3: Life cycle impact assessment**	Quiz 1 on L1
September 23	Project session	
September 28	**L4: Interpretation**	Quiz 2 on L2
September 29		Assignment 1 Submission - report
Sept 30	No class – holiday	

October 5	No class / SAPL Block Week	
October 7	No class / SAPL Block Week	
October 12	**L5: Environmental Product Declarations and Product Category Rules**	Quiz 3 on L3
October 14	Project session	
October 19	Project session	Quiz 4 on L4
October 21	Project session	
October 26	Project session	Quiz 5 on L5
October 27		Assignment 2 Submission – report
October 28	Project session	
November 2	Project session	
November 4	Project session	
November 9	No class– term break	
November 11	No class – term break	
November 16	Project session	
November 18	Project session	
November 23	Project session	Assignment 3 Submission – report
November 25	Project session	
November 30	Project session	
December 2	Project session	Assignment 4 Submission – report and presentation file
December 7	Project presentation	
December 9	Project presentation	

Guidelines for Zoom Sessions

Zoom is a video conferencing program that will allow us to meet at specific times for a "live" video conference, so that we can have the opportunity to meet each other virtually and discuss relevant course topics as a learning community.

To help ensure Zoom sessions are private, do not share the Zoom link or password with others, or on any social media platforms. Zoom links and passwords are only intended for students registered in the course. Zoom recordings and materials presented in Zoom, including any teaching materials, must not be shared, distributed or published without the instructor's permission.

The use of video conferencing programs relies on participants to act ethically, honestly and with integrity; and in accordance with the principles of fairness, good faith, and respect (as per the Code of Conduct). When entering Zoom or other video conferencing sessions (such as MS Teams), you play a role in helping create an effective, safe and respectful learning environment. Please be mindful of how your behaviour in these sessions may affect others. Participants are required to use names officially associated with their UCID (legal or preferred names listed in the Student Centre) when engaging in these activities.
Instructors/moderators can remove those whose names do not appear on class rosters. Non-compliance may be investigated under relevant University of Calgary conduct policies (e.g

[Student Non-Academic Misconduct Policy](#)). If participants have difficulties complying with this requirement, they should email the instructor of the class explaining why, so the instructor may consider whether to grant an exception, and on what terms. For more information on how to get the most out of your zoom sessions visit: https://elearn.ucalgary.ca/guidelines-for-zoom/

If you are unable to attend a Zoom session, please contact your instructor in advance to arrange an alternative activity for the missed session (e.g., to review the recorded session). Please be prepared, as best as you are able, to join class in a quiet space that will allow you to be fully present and engaged in Zoom sessions. Students will be advised by their instructor when they are expected to turn on their webcam (for group work, presentations, etc.).

The instructor may record online Zoom class sessions for the purposes of supporting student learning in this class – such as making the recording available for review of the session or for students who miss a session. Students will be advised before the instructor initiates a recording of a Zoom session. These recordings will be used to support student learning only and will not be shared or used for any other purpose.

University of Calgary Policies and Supports

COVID-19 PROCEDURE FOR SICK STUDENTS: https://ucalgary.ca/risk/sites/default/files/Covid-19%20Folder/COVID-19-Procedure-for-Sick-Students.pdf

ACADEMIC ACCOMMODATION
It is the student's responsibility to request academic accommodations according to the University policies and procedures listed below. The Student Accommodations policy is available at https://ucalgary.ca/student-services/access/prospective-students/academic-accommodations.
Students needing an accommodation based on disability or medical concerns should contact Student Accessibility Services (SAS) in accordance with the Procedure for Accommodations for Students with Disabilities (https://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities.pdf). Students who require an accommodation in relation to their coursework based on a protected ground other than Disability should communicate this need in writing to their Instructor.
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://ucalgary.ca/policies/files/policies/student-academic-misconduct-policy.pdf
https://ucalgary.ca/policies/files/policies/student-academic-misconduct-procedure.pdf
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 (www.ucalgary.ca/policies/files/policies/acceptable-use-of-
material-protected-by-copyright.pdf) 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 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/policies/files/policies/sexual-
violence-policy.pdf

UNIVERSITY STUDENT APPEALS OFFICE: If a student has a concern about the course,
academic matter, or a grade that they have been assigned, they must first communicate
this concern with the instructor. If the concern cannot be resolved with the instructor, the

student can proceed with an academic appeal, which normally begins with the Faculty.
https://www.ucalgary.ca/secretariat/student-appeals

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