



<b>Course Number</b>	ARCH 672.21 L07	<b>Classroom</b>	PF 2160 or Zoom
<b>Course Name</b>	Energy + Environment Session 01		
<b>Pre/Co-Requisites</b>			
<b>Instructor</b>	Dr. Ali Syed	<b>Office Hours/Location</b>	?
	<b>Email: ali.syed5@ucalgary.ca</b>	<b>Phone: 825-440-1419</b>	
<b>Class Dates</b>	Course will meet from October 3-7, 2022.		
<b>Instructor Email Policy</b>	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.		
<b>Name and Email of Teaching Assistant(s)</b>	N/A		

### Course Description

The objective of the course is to introduce students to the concepts of energy and environmental sustainability. The course will focus on the development of the energy model.

The goal is to be able to understand energy usage of buildings and be able to assist HVAC and architectural design teams to optimize their design for the best energy and cost options. The modeling software used for this course will be RETScreen.

**Course Hours: (3-0) 1.5 Units**

### Course Learning Outcomes

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

1. Understanding basics of heat transfer
2. Heat load calculations for buildings
3. Understand details of Energy Modeling
4. Overview of different standards, like ASHRAE 90.1 and ASHRAE 62.1
5. Understand how to translate the building design to develop an energy model

6. Being able to run different design options for HVAC, electrical and architectural systems to do parametric energy simulations to optimize the design
7. Complete energy modeling in RETScreen
8. Introduction to International Performance Measurement and Verification Protocol (IPMVP).
9. Introduction to the methods applied for the M&V of energy efficiency projects.
10. Being able to do the cost and energy savings analysis for design optimization
11. Learn how to calculate energy savings and perform simple payback analysis and lifecycle cost evaluations.

## Learning Resources

Required readings, textbooks and learning materials:  
Readings will be provided in the course D2L site.

### **Technology requirements (D2L etc.):**

Students will need their laptops each day with RETScreen installed. It is important to have this software installed, even if it is a trial version. The link to the software is:

<https://www.nrcan.gc.ca/maps-tools-and-publications/tools/modelling-tools/retscreen/7465>

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

### **Workshop Safety Training Requirement**

If a course requires the use of the SAPL workshop, students must complete all online University of Calgary safety courses, the online Trajectory safety training course, as well as in-person workshop training and a grade of pass on the final evaluation project, to be granted access to the SAPL workshop. This training is offered once a year, around the start of the Fall term and has a completion deadline.

## 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

Assessment Method	Description	Weight	Aligned Course Learning Outcome
Course Participation	Course attendance is mandatory	20%	Knowledge of basic building sciences
Course Deliverables	Solutions to all problems on Friday Oct 7 <sup>th</sup> in a printed format	60%	Problem solving for real-life energy design challenges
Final Exhibition Deliverable	A group presentation, 20 minute per group with 5 mins for Q&A	20%	Development of team approach for integrated project development for energy and environmental projects

## Assessment and Evaluation Information

**Attendance and Participation Expectations:** Attendance during all contact hours is required and students are expected to fully participate in group work completed outside of contact hours. Block weeks are intensive courses that require time outside of the contact hours to complete given assignments.

### Guidelines for Submitting Assignments:

Daily assignments should be submitted either in the printed or hand written format. The final group assignment in RETScreen must be submitted electronically by each group.

**Final Examinations:** Participation in the final block week exhibit on the evening of October 7<sup>th</sup> constitutes the final review of work and the details of this participation and deliverables will be described by your instructor.

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

### Late Assignments:

Late assignments will not be accepted.

Criteria that must be met to pass: At least 70% score in the course assignments and evaluation of final group presentation

## 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/salp-3-3.html>)

## Topic Areas & Detailed Class Schedule

*Include information relevant to the class schedule, such as weekly topics, readings, and assignment due dates. For online, remote or blended courses include whether course activities are synchronous (i.e., real-time/Zoom) and asynchronous (i.e., students complete on their own time such as discussion boards, watching videos, etc.). It is recommended that important dates including the first day of classes, holidays, term breaks and last day of classes also be included.*

Course Schedule Date	Topic	Assignments/Due Dates
Monday October 3	Heat transfer and heating load calculations	October 04
Tuesday October 4	Energy Modeling and ASHRAE standards on energy	October 05
Wednesday October 5	M&V and Energy costing analysis	October 06
Thursday October 6	Energy auditing	October 07
Friday October 7	Presentations, Final Exhibit and Reception	October 07
Indicate the following dates:		
<ul style="list-style-type: none"> <li>If applicable, dates, times and locations of all approved class activities scheduled outside of regular course hours</li> </ul>		

## 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.

## Special Budgetary Requirements

This course will rely heavily on Rescreen for demonstration of energy modeling and energy savings calculations. RETScreen in “Viewer Mode” offers limited functionality.

For users to allow save and print features in RETScreen, it is recommended to purchase the “Expert” mode for this course for the use of the students.

## University of Calgary Policies and Supports

**COVID-19 PROCEDURE FOR SICK STUDENTS:** <https://www.ucalgary.ca/risk/covid-19-procedure-for-sick-students>

**UNIVERSITY OF CALGARY COVID-19 UPDATES:** <https://www.ucalgary.ca/risk/emergency-management/covid-19-response>

### 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/university-policies-procedures/accommodation-students-disabilities-procedure>

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/](http://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](http://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 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