



**UNIVERSITY OF CALGARY**  
SCHOOL OF ARCHITECTURE,  
PLANNING AND LANDSCAPE

## **ARCH 612 | Building Science and Technology II**

Winter 2022 | MW 11:00 – 12:30

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Before Jan 31, 2022, this course will take place **online** via Desire2Learn (D2L) and Zoom. Students are required to participate in the asynchronous learning tasks using the D2L learning environment and synchronous Zoom sessions. If unable to participate live due to unforeseen circumstances, inform the instructor in advance to work out an alternative participation activity (e.g., watch the recordings, submit a brief reflection, and actively contribute to the follow-up online discussion).

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.

Please note that all course communications must occur through your @ucalgary email, and the teaching team will respond to emails sent via the student's @ucalgary email within 48 hours.

### **Introduction**

This course explores the interdependencies between design and building science and technology at different scales. This course focuses on the application of building science principles to building structures and enclosures. It examines various types of building elements in manners appropriate to their intended functions and performances. The understanding of building enclosures requires familiarity with individual components that make up the total structure. Each component interacts and interrelates with one another. This course examines the function and configuration of building components from footings to wall and roofing systems.

## Learning Outcomes

- To develop a sound understanding of how building science and technology impact design at different scales
- To develop a sound understanding of building envelope components and their influence on building performance for high occupant satisfaction
- To acquire necessary skills to read, design and illustrate certain architectural details as an effective means of communication.
- To become familiar with the basic requirements of the National and Alberta Building Code that most impact design

## Topic Areas & Detailed Class Schedule

Week	Topics of Monday lectures	Wednesday presentations & reviews Assignments and due dates
1 (Jan 10, 12)	Course introduction	Assignment briefing, presentation plan, Q&A, feedbacks
2 (Jan 17,19)	Water	Weekly presentations ~ 2 groups & desk crits ~6 groups
3 (Jan 24, 26)	Occupant thermal comfort	Weekly presentations ~ 2 groups & desk crits ~6 groups
4 (Jan 31, Feb 2)	Energy	Weekly presentations ~ 2 groups & desk crits ~6 groups
5 (Feb 7, 9)	Dense and green	Weekly presentations ~ 2 groups & desk crits ~6 groups
6 (Feb 14, 16)	Air, light and sound	Weekly presentations ~ 2 groups & desk crits ~6 groups <b>Assignment 1 due on Feb 16</b>
7 (Feb 21, 23)	Reading Week	
8 (Feb 28, Mar 2)	Green building standards and ratings (guest lecture TBD)	Weekly presentations ~ 2 groups & desk crits ~6 groups
9 (Mar 7, 9)	Health and safety	Weekly presentations ~ 2 groups & desk crits ~6 groups
10 (Mar 14, 16)	SAPL Block Week	
11 (Mar 21, 23)	Urban mobility (guest lecture TBD)	Weekly presentations ~ 2 groups & desk crits ~6 groups
12 (Mar 28, 30)	Constructability	Weekly presentations ~ 2 groups & desk crits ~6 groups
13 (Apr 4, 6)	Circular cities	Weekly presentations ~ 2 groups & desk crits ~6 groups <b>Assignment 2 due on Apr 6</b>
14 (Apr 11, 13)	Studio project finalization	

**Recommended textbook**

Edward Allen and Patrick Rand (2016) Architectural Detailing: Function, Constructability, Aesthetics. John Wiley & Sons, Incorporated.

*This book is accessible online via UCalgary Library.*

**Learning Resources for Assignment 1**

Alberta Building Code (2019 ABC)

2017 National Energy Code for Buildings (2017 NECB)

*Both are available online.*

<https://www.alberta.ca/building-codes-and-standards.aspx>

**Evaluation**

There will be no final exam. Students must obtain an overall passing grade to pass this course. The final evaluation is based on the following:

Class participation, 10%

Presentation, 10%.

Assignment 1, 10% – Building Code Review. Due date Feb.16. Submission to be submitted digitally as a PDF.

Assignment 2, 20% – Case Analysis & Review. Due date Apr. 6. Submission to be submitted digitally as a PDF.

Studio Project, 50%. – Due date TBA. Submission to be submitted digitally as a PDF.

**Grading Scale**

The SAPL standard grading scale will be used in all evaluations for this course.

A+ (95.0-100.0); A (90.0-94.99); A- (85-89.99);

B+ (80.0-84.99); B (75.0-79.99); B- (70.0-74.99);

C+ (65.0-69.99); C (60.0-64.99); C- (55.0-59.99);

D+ (50.0-55.99); D (45.0-49.99);

F (0-44.99).

Final grades will be reported as letter grades, with the final grade calculated according to the 4- point range." All project phases will be evaluated by percentage grades, with their letter grade equivalents as shown.

NOTE: 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. If a student receives a grade less than B- for any assignment worth 30% or more, the student will receive an F grade for the course.

## **Canadian Architectural Certification Board (CACB) Student Performance Criteria**

The following CACB Student Performance Criteria will be covered in this course at a primary level: A7. Detail Design; A8. Design Documentation; B4. Ecological Systems; C1. Regulatory Systems; C2. Materials; C4. Envelope Systems;

## **Technology Requirements**

In order to successfully engage in their learning experiences at the University of Calgary, students taking online, remote and blended courses 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

## **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/](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 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

#### Student Appeals

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.