



Course Number	ARCH 680	Classroom	PF 2160 or Zoom
Course Name	Special Topics in Architecture		
Pre/Co-Requisites	None		
Instructor	Mauricio Soto-Rubio	Office Hours/Location	PF4181 Mondays 3:00 pm – 5:00 pm
	Email: Mauricio.sotorubio@ucalgary.ca		Phone: 403.220.5507
Class Dates	Tuesdays 9:00 am – 12:00 pm via Zoom		
Instructor Email Policy	Please note that all course communications must occur through your @ucalgary email. I will respond to emails sent via student's @ucalgary emails within 48 hours.		

Course Description

This seminar explores the design of form-active structures including tensile fabric structures, catenary arches and domes, tree-branched structures, gridshells, deployable and other lightweight structures. Through lectures and practical exercises, students learn basic design principles, become familiar with digital and physical form-finding techniques, understand detailing, manufacturing and installation procedures, as well as the potential and limitation of the different materials typically used in this type of constructions. In addition, this seminar includes the development of a design exercise to be completed in teams of 2.

Course Hours: 3 units; (2-1Tutorial)

Online Delivery

This course will take place both online via Desire2Learn (D2L) and Zoom. Online lectures will be both synchronous (live) and asynchronous (recorded). 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.

Course Learning Outcomes

Upon completion of this course, students will:

1. To learn the fundamental principles related with the design, manufacturing, engineering, and installation of tensile membrane structures.
2. To develop the necessary skills to design tensile membrane structures including digital and physical form-finding techniques
3. To become familiar with contemporary materials commonly used in tensile membrane structures.

Learning Resources There are no required textbooks and/or readings for this course. The following list include recommended textbooks:

- Otto, Frei, & Rasch, Bodo, Finding Form, (1995, Edition Axel Menges)
- KNIPPERS, J.; CREMERS, J.; GABLER, M; LIENHARD, J.: Atlas Plastics + Membranes: Materials und products, Formfinding und Construction. (Institute for International Architectural Documentation. Munich: Edition Detail, 2010
- Engel, Heino, Structure Systems, (1997, Distributed Art Publishers, New York)

Required readings, textbooks and learning materials: Please refer to D2L website

Technology requirements (D2L etc.): 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
- [Student IT Resources](#)

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

Workshop Safety Training Requirement

If a course requires use of the SAPL workshop, both the online Trajectory safety training course as well as in-person workshop training and a grade of pass on the final evaluation project must be completed before a student will be granted access. This training is offered once a year, around the start of Fall term.

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 turned off your cellphone and 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
Group Presentations (3 students)	30-45 min presentations on additional topics	40%	
Group Project (2 – 3 students) Midterm Review	Presentation showing final detail design proposal	60%	

Assessment and Evaluation Information

Attendance and Participation Expectations:

Absences will not count towards administrative fail, but students are responsible for any missed work. Presentations must be completed during the first 30-45 minutes of lecture class. Missed presentations due to un-excused absences will receive no credit.

Final Presentations:

The seminar includes a design exercise to be developed in groups of 3 students. Desk Crits, class pin-ups, and presentations are the essential components of this seminar's evaluation. Since architecture is a visual medium, it is critical to have new and thoughtful visual work (drawings, models) each class session. If the instructor comes asks to see your work and find you have no significant new visual work (a scribble in your sketchbook does not count), we will move on to the next student. The grading of the exercise will follow the following guidelines: Adequacy of overall form (20%), physical form-finding models (20%), details (20%), patterns (20%), and digital form-finding (20%).

Criteria that must be met to pass: 70%, or a B-.

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 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.

CACB Student Performance Criteria

The following CACB Student Performance Criteria (SPCs) will be covered in this course at a primary level: None. Secondary Level: A2 Design Skills; C3 Structural systems, Building Materials and Assemblies.

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
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Examples below, please adjust to fit your course dates.

Sep 7 9:00 am – 10:00 am 10:30 am – 12:00 pm	Course Introduction / History of tensile membrane structures. Basic design principles. Introduction of design exercise.	
Sep 14 9:00 am – 10:00 am 10:30 am – 12:00 pm	Detailing of tensile membrane structures / Materials for tensile membrane structures	
Sep 21 9:00 am – 10:00 am 10:30 am – 12:00 pm	Fabrication and Installation of tensile membrane structures / Deployable structures	
Sep 28 9:00 am – 10:00 am 10:30 am – 12:00 pm	Inflatable membrane structures / Digital form-finding techniques	
Oct 5	No classes – SAPL block week	
Oct 12 9:00 am – 10:00 am 10:30 am – 12:00 pm	Student Presentation on Branch Structures / Deskcrits	Student Presentation (team 1)
Oct 19 9:00 am – 10:00 am 10:30 am – 12:00 pm	Student Presentation on catenary arches and domes / Deskcrits	Student Presentation (team 2)
Oct 26 9:00 am – 10:00 am 10:30 am – 12:00 pm	Student Presentation on Gridshell Structures / Deskcrits	Student Presentation (team 3)

Nov 2 9:00 am – 10:00 am 10:30 am – 12:00 pm	Student Presentation on Cable Net Structures / Deskcrits	Student Presentation (team 4)
Nov 9	No classes – term break	
Nov 16 9:00 am – 10:00 am 10:30 am – 12:00 pm	Student Presentation on Foldable Structures (origami) / Deskcrits	Student Presentation (team 5)
Nov 23 9:00 am – 10:00 am 10:30 am – 12:00 pm	Deskcrits	
Nov 30 9:00 am – 10:00 am 10:20 am – 12:00 pm	Deskcrits	
Dec 7	Final Design Review	

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

Special budgetary requirements are limited to the optional purchase of course readings

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 accommodation policy can be found at: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Accommodation-Policy.pdf>

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: 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://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