### Course Number
ARCH 610

### Classroom
Zoom (Mon) and PF2160 (Wed)

### Course Name
Structures for Architects 2

### Pre/Co-Requisites

### Instructor
Mauricio Soto-Rubio

### Office Hours/Location
Mon. and Wed. 1:00 pm to 2:00 pm by appointment

**Email:** Mauricio.sotorubio@ucalgary.ca  
**Phone:** 403.220.5507

### Class Dates
Mondays and Wednesdays, January 10 – April 11, 9:00am to 10:30am

### 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)
Adam Robertson. Adam.robertson@ucalgary.ca

### Course Description
This course explores different structural systems and materials commonly used in contemporary architecture. The course revisits some of the structural principles learned in Structures for Architects 1 and provides students with the analytical tools to evaluate the system’s characteristics, behavior, and specific physical requirements. This course is part of the EVDS building technology sequence and it is designed to support Comprehensive Building Design Studios.

**Course Hours:** 3 units

### Online Delivery (If applicable)
This course will take place both in person and 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).

### Course Learning Outcomes
Upon completion of this course, students will know and be able to:

1. Understand structures as an integral part of any architectural project.
2. Become familiar with different structural analysis and finite element analysis programs.
3. Develop the ability to evaluate and determine the appropriateness of structural systems and materials.
4. Interpret the different loads applied to a structure.
5. Describe the factors affecting the choice of structural system in a project.
Learning Resources

This course has no required textbook. Recommended books include:


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

This 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

<table>
<thead>
<tr>
<th>Assessment Method</th>
<th>Description</th>
<th>Weight</th>
<th>Aligned Course Learning Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exercises</td>
<td>Group Digital Structural Analysis Exercises (3)</td>
<td>30%</td>
<td>1 to 5</td>
</tr>
<tr>
<td>Physical Model</td>
<td>Group Sectional Physical Model of Studio Project</td>
<td>40%</td>
<td>1 to 5</td>
</tr>
<tr>
<td>Final Exam</td>
<td>Individual final Exam of Theory Components</td>
<td>30%</td>
<td>1 to 5</td>
</tr>
</tbody>
</table>
**Assessment and Evaluation Information**

**Attendance and Participation Expectations:** Students are expected (but not required) to attend and participate in all live lectures and lab sessions.

**Guidelines for Submitting Assignments:** Exercises must be uploaded to the appropriate Dropbox folder on our D2L Website.

**Final Examinations:** Final exam will be closed book and in person (Covid permitting)

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

**Late Assignments:** late assignments without extenuating circumstances will receive no credit.

**Criteria that must be met to pass:** 70% (B-) is the minimum passing grade in the Faculty of Graduate Studies.

### Grading Scale

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

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

<table>
<thead>
<tr>
<th>Primary:</th>
<th>B7 - Structural Systems, B11 - Building Materials and Assemblies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary:</td>
<td>B1 - Design Skills</td>
</tr>
</tbody>
</table>

### 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.*

<table>
<thead>
<tr>
<th>Course Schedule Date</th>
<th>Lecture (Mon)</th>
<th>Lab (Wed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 10 &amp; 12</td>
<td>Course Introduction. Structural Materials and Systems</td>
<td>Introduction to Visual Analysis</td>
</tr>
<tr>
<td>January 24 &amp; 26</td>
<td>Solid Armature. Surface Active Structures</td>
<td>Visual Analysis</td>
</tr>
<tr>
<td>January 31 &amp; February 2</td>
<td>Reinforced Concrete Structures</td>
<td>Visual Analysis <em>(Visual Analysis Exercise Due)</em></td>
</tr>
<tr>
<td>February 7 &amp; 9</td>
<td>Open Armature. Vector and Section Active Structures.</td>
<td>Introduction to Wood Works</td>
</tr>
<tr>
<td>February 14 &amp; 16</td>
<td>Steel Structures</td>
<td>Wood Works</td>
</tr>
<tr>
<td><strong>February 21 &amp; 25</strong></td>
<td>Term Break – No Class</td>
<td></td>
</tr>
<tr>
<td>February 28 &amp; March 2</td>
<td>Wood Structures</td>
<td>Wood Works <em>(Mock-up Model Due)</em></td>
</tr>
<tr>
<td>March 7 &amp; 9</td>
<td>Light Wood Framing</td>
<td>Wood Works <em>(Wood Works Exercise Due)</em></td>
</tr>
<tr>
<td><strong>March 14 &amp; 16</strong></td>
<td>SAPL Block Week – No Class</td>
<td></td>
</tr>
<tr>
<td>March 21 &amp; 23</td>
<td>High-Active Structures</td>
<td>Introduction to Sofistik Model Ground and Foundations Due</td>
</tr>
<tr>
<td>March 28 &amp; 30</td>
<td>Form Active Structures</td>
<td>Sofistik Model Primary Structural Members Due</td>
</tr>
<tr>
<td>April 4 &amp; 6</td>
<td>Deskrcits/Sofistik</td>
<td>Sofistik Final Model Due</td>
</tr>
<tr>
<td>April 11 &amp; 13</td>
<td><em>(Sofistik Exercise Due)</em></td>
<td>Final Exam</td>
</tr>
</tbody>
</table>

### 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
engaging other integrity; most officially The These policies on alternative consideration as these 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
There are no special budgetary requirements for this course.

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/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/.  

**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
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 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