



Course Number	ARCH 694.6 L05	Classroom	Zoom and other online platforms
Course Name	Modeling and Simulation in Maya		
Pre/Co-Requisites	This course is mandatory for students in Nahmad Vazquez studio. Studio Students will be given priority before opening it to others.		
Instructor	M.Arch Mauricio Villagra dell’Erba	Office Hours/Location	by appointment
	Email: mauricio.villagra@zaha-hadid.com	Phone: +44 7747432855	
Class Dates	Mandatory real-time Zoom classes From January 09 to April 12 2023 Tuesday, 9:00 to 10:30am (Meeting days)		
Instructor Email Policy	Course communications must occur through your mauricio.villagra@zaha-hadid.com email, and I will respond to emails sent via student’s @ucalgary emails within 48 hours. Additionally, communication and sharing platforms will be available for communication during the duration of the course.		
Name and Email of Teaching Assistant(s)	N/A		

Course Description

Modeling and Simulation in Maya

Keywords: architectural geometry, experiential tectonics, system design, kit of parts, digital fabrication, fabrication and structurally aware geometries, typology informative, structural spatial experience.

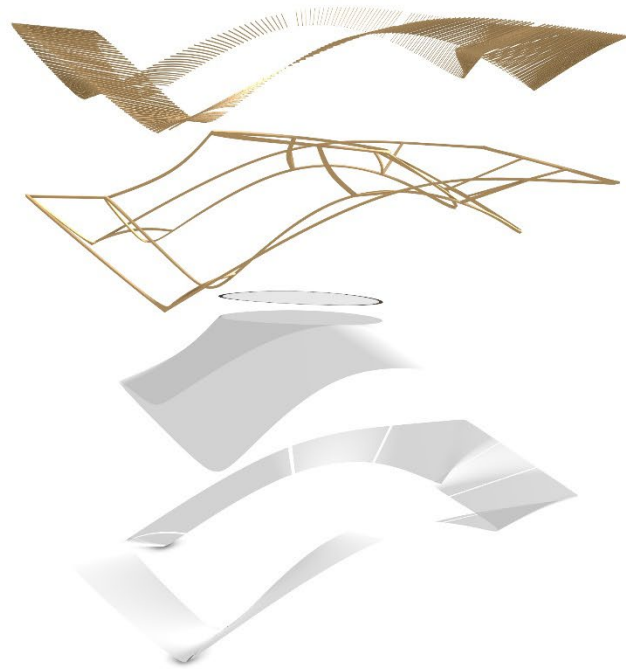
The course explores the relevance of different design approaches and digital fabrication technologies, with the primary goal of how to create spatial experiences. Through the principles of low poly modeling technique, voxel stacking, and shape making, students will review how physical and digital worlds are correlated and can improve each other.

Along with these ideas and exercises, students explore the relevance of this state-of-the-art design and construction paradigm in the realm of different fabrication technologies such as Robotic Hot Wire Cutting, Digital Timber, 3D Printing Concrete, Ruled Surface, etc. They are engaging with the medium of digital software in an explorative approach which is the correct trajectory of inquiry.

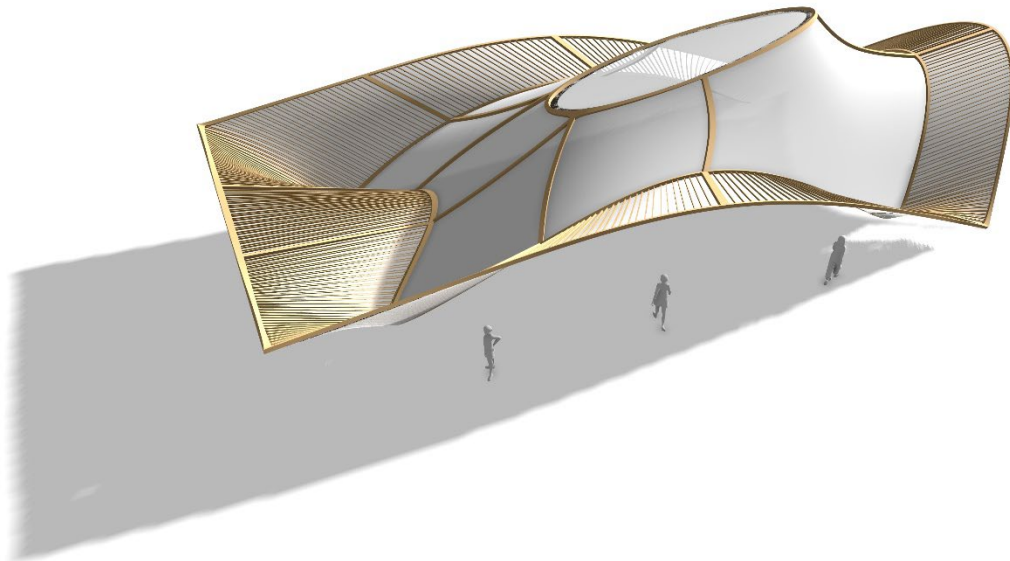
**“Our Age of Anxiety is, in great part, the result of trying to do today’s jobs with yesterday’s tools”
Marshall McLuhan**

Historic Continuum - Learn from the past, stand on the shoulders of giants.

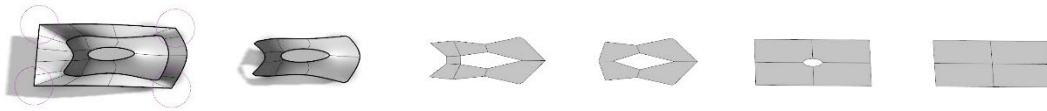
Course Hours: 1.5 units



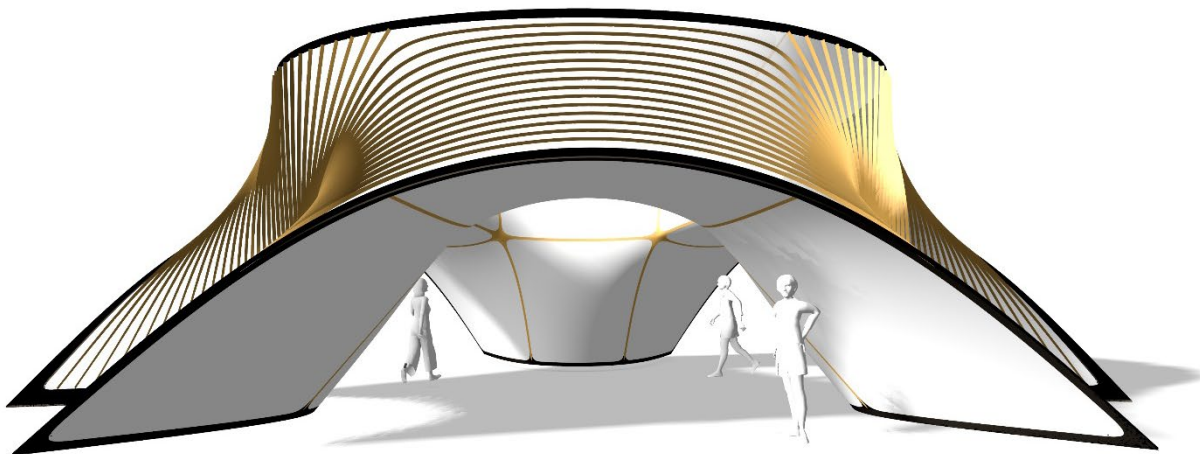
Combinatoric kit of parts
Image by Mauricio Villagra dell'Erba



Architectural Geometry – Tension shell and timber tectonics
Image by Mauricio Villagra dell'Erba



Procedural modeling
Image by Mauricio Villagra dell'Erba



Architectural Geometry – Tension shell and timber tectonics
Image by Mauricio Villagra dell'Erba

Online Delivery (If applicable)

The course will be delivered online using resources such as zoom.

Students are expected to follow all assignments, to be fully present for studio on Tuesdays (and as otherwise required by the instructor/schedule) and attend all lectures and reviews.

Students will also be expected to read any assigned readings. Detailed project descriptions will be provided throughout the term.

Online resources and collaborative platforms will be used to share information and resources in real time, students are expected to participate and engage in them, share material and progress.

For example: 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).

Course Learning Outcomes

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

1. Exploratory design exercises by learning while doing will boost their design skill in the digital medium.
2. Critical design thinking and design skills through the design based on a critical understanding of the material, digital fabrication systems, and machines with the opportunities and complexities that they afford to designers and contemporary architectural language.
3. Understand digital design and fabrication processes for the innovation of digitally enhanced environments.
4. Design and deploy a kit of parts that takes advantage of digital fabrication technologies whilst offering novel spatial experiences.
5. Particularly tailor an approach to architectural design and scopes, representing geometry in the digital environment, focusing on mesh technology.
6. Low poly modeling knowledge for informative typology geometries in a procedural modeling technique.

Learning Resources

Readings and links will be provided to students through the course by the instructor on the course handout.

Required readings, textbooks and learning materials:

Technology requirements (D2L etc.): *For example:* 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 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
Phase 01	Procedural modeling technique exercise.	30%	1 to 3
Phase 02	Kit of parts. Application of Architectural Geometries in modular construction. Design and customization of parametrically flexible building components.	30%	1 to 3
Phase 03	Voxel stacking. Create digitally enhanced environments associated with specific parameters or rule sets constrained to set-out grids.	30%	1 to 3
Phase 04	Final presentation	10%	3

Assessment and Evaluation Information

Attendance and Participation Expectations:

Students will be expected to follow all assignments, to be present for course on Tuesdays (and as otherwise required by the instructor/schedule) and attend all lectures and reviews.

Guidelines for Submitting Assignments:

Detailed project descriptions will be provided throughout the term.

Student submissions are closely related to their master studio 6 submissions and studio project expected progress.

Final Examinations:

Will consist of the modeling project presentation.

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

Late Assignments:

Criteria that must be met to pass: (e.g. whether a passing grade on any particular component of a course is essential if the student is to pass the course as a whole; information on what students should do if they miss a required component of the course, etc.)

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>)

(for Architecture courses only) CACB Student Performance Criteria

The following CACB Student Performance Criteria will be covered in this course:

Primary Level: A1: Modeling skills; A2: Design Skills; A3: Design Tools; A5: Design Documentation

Secondary Level: A4: Analysis; B1: Critical Thinking and Communication.

Topic Areas & Detailed Class Schedule

As studio projects evolve, the content of the course will be tailored to specific project requirements; as such, the last two weeks are envisioned as interactive and project-specific and will be designed accordingly.

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
<i>Examples below, please adjust to fit your course dates.</i>		
Jan 9 – 13	Introduction / User interface	
Jan 16 - 20	Procedural Modeling	
Jan 23 - 27	Representation / Playblast	
Jan 30 – Feb 3	Ruled Geometry / HWC Concrete	
Feb 6 - 10	Timber Tectonics / Dimensional timber	
Feb 13 - 17	Fabrication aware geometries	
Feb 19 -25	Term Break	
Monday Feb 20	Alberta Family Day Holiday	
Feb 27 – Mar 3	Structural funnels / Masonry	
Mar 6 - 10	Minimal surface	
Mar 13 - 17	Winter Block Week	
Mar 20 - 24	Kit of Parts	
Mar 27 – 31	Stacking AG / Voxel Aggregation	
Apr 3 - 6	AG Representation	
Friday April 7	Good Friday	
Monday April 10	Easter Monday	
Apr 11 - 12		

Indicate the following dates:

- If applicable, dates, times and locations of all approved class activities scheduled outside of regular course hours

Guidelines for Zoom Sessions

If video conferencing tools such as Zoom or MS Teams will be used during course activities, provide information related to student learning and conduct, and indicate whether these sessions will be recorded.

For example:

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 and, in specific courses, mandatory supplementary fees to cover certain expenditures, such as field trips. Mandatory supplementary fees must be approved by the University prior to implementation. Instructors are required to list and describe approved optional and mandatory supplementary fees for courses. This can include possible costs incurred for special materials, equipment, services, or travel.

Optional:

For certain courses students may be given the option of purchasing course readings. In these cases the cost of the reading package should be stated in the course outline. When course

readings are available for purchase, a minimum of two copies of the readings must be made available at the SAPL Reception or online.

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/.

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 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