



**ARCH 548  
MEDIA FOR LANDSCAPE ARCHITECTURE:  
3D Design**

SPRING 2023 | 3 UNITS

Wednesday 9:00–11:50 in MLA Corner

**INSTRUCTOR:** Xun Liu

**OFFICE HOURS:** By Appointment ([Link](#))

**CONTACT INFO:** [xliu8081@usc.edu](mailto:xliu8081@usc.edu)

**COURSE FOLDER:** [Link](#)

**COURSE DESCRIPTION**

Computation has a profound impact on a contemporary understanding of landscape architectural form, space and structure. It shifts the way in which form is perceived, purposed, and produced. This course introduces new conceptual frameworks on computational thinking, spatial structures, and associative modeling in conjunction with long-standing 3D techniques, technologies and software workflows fundamental to the design process. It will investigate the potential of algorithmic logics for computational design and provide a new method to explore spatial organization.

This course will give students an introduction to geometrical and terrain modeling in Rhino and Grasshopper, representational strategies in Unity, and the workflows between different software. Through a series of lectures and interactive lab sessions accompanied by readings and exercises, students will gain technical fluency while also building a strong critical framework for understanding how computation has historically and presently informed design in landscape architecture.

**LEARNING OBJECTIVES**

As the second in a sequence of media requirements at USCA, the course will function as an extension of the learning objectives achieved last term. As such, students will begin with familiar techniques which they will develop toward more advanced uses of expanded media within landscape architecture. The exercises, readings, discussions, and assignments are designed to support the following goals:

- To expand on the landscape architectural techniques of observation, translation, abstraction and notation covered in ARCH 539 through additive and associative modeling of sites and geometries.
- To contextualize contemporary computational design methods within a critical, historical framework to build an understanding of the evolving role of technology in the design process.
- To introduce students to design tools and methods that promote computational and systems thinking while simultaneously cultivating a practice of self-learning, experimentation and discovery.
- To equip students with the technical and representational skills to better realize and render their designs while giving them the opportunity to discover and test formal and representational strategies outside of a studio setting.

## COURSE FORMAT

This class is scheduled to meet Wednesday, 9-11:50pm PDT and will be held in person at the Landscape Corner. Course communication will be conducted via the Class Slack Channel. Formal announcement will be communicated via both email and Slack. All course material including readings, lectures and tutorials, exercises, assignment briefs will be uploaded to our Google Drive course folder.

Classes will typically begin with a **lecture** to situate the concepts that will be covered in that week followed by an **in-class tutorial** to practice the process of making. Your **weekly exercise** (10 in total) will be a more in-depth exploration of topics, building on the lecture, readings, and the in-class work. The weekly exercise is due before next week's class. We will discuss the exercise in class, so no late submission is accepted. You will have one **semester-long project** that is split into two pieces. We will have working sessions before the mid-review and final-review of the project. During these sessions I will be available for one-on-one desk-crits to discuss your ideas and their physical development.

## DESCRIPTION AND ASSESSMENT OF ASSIGNMENTS

Your grade will be evaluated based on the following criteria:

Intent: You will be evaluated based on the ability to articulate your rationale in all aspects of your work including the following: verbal, visual, digital, technical, and physical modelmaking.

Process: You will be evaluated on the iterative process of making. You are expected to take risks and engage in design exploration. Your project must develop over time and respond to critique.

Craft: You will be evaluated on the quality of your drawings, models, and verbal presentation, which demonstrate your mastery of the skills and techniques introduced in this course.

Participation in pinups and desk-crits is also required for success in this course.

## GRADING BREAKDOWN

Participation	10%
Exercises	5% x 10
Project (Mid-term)	15%
Project (Final)	25%

## TECHNOLOGICAL UTILIZATION

The tutorials in this class will mainly utilize Rhino, Grasshopper, Unity, digital fabrication tools. You will also use other software including Adobe Illustrator, Photoshop, After Effects as well as Laser cutting and Physical modeling to finish exercises and projects.

Each of these processes will begin with basic in-class introductory tutorials. Students are expected to practice on their own and to utilize online instruction through Lynda.com available to USC students for free through the MyUSC portal or other sources of instruction found online (Youtube tutorials, etc).

## **COURSE READINGS AND SUPPLEMENTARY MATERIALS**

Course readings will be used as reference and as theoretical compliments to the practical work of media making. Readings can be accessed via the Google Drive folder for this course.

## **GRADING SCALE**

Course final grades will be determined using the following scale:

A	95-100	C	73-76
A-	90-94	C-	70-72
B+	87-89	D+	67-69
B	83-86	D	63-66
B-	80-82	D-	60-62
C+	77-79	F	59 and below

## **ASSIGNMENT SUBMISSION POLICY**

Please upload high resolution files in the appropriate format (jpeg, pdf, etc), 3D model files, and properly photographed images of completed assignments to the Google Drive folder for the course.

## **LATE ASSIGNMENTS**

To remain fair to the rest of your classmates, any assignments that are received after the deadline will be docked 1/3 of a letter grade for every day late.

## **GRADING TIMELINE**

Regular feedback will be provided during pinups and desk-crits. Formal written feedback will be provided at the midpoint of the semester.

## **ATTENDANCE POLICY**

The School of Architecture's attendance policy is to allow a student to miss the equivalent of one week of class sessions (so one class session for ARCH 548) without directly affecting the student's grade and ability to complete the course. If additional absences are required for a personal illness/family emergency, pre-approved academic reason/religious observance, the situation should be discussed and evaluated with the faculty member and appropriate Chair on a case-by-case basis. For each absence over that allowed number, the student's letter grade will be lowered 1/3 of a letter grade (e.g., A to A-).

Any student not in class within the first 10 minutes is considered tardy, and any student absent for more than 1/3 of the class time can be considered fully absent. If arriving late, a student must be respectful of a class in session and do everything possible to minimize the disruption caused by a late arrival. It is always the student's responsibility to seek means (if possible) to make up work missed due to absences, not the instructors', although such recourse is not always an option due to the nature of the material covered.

**COURSE SCHEDULE**

W	DATE	Content
1	1/11	Course Introduction <i>Tutorial 01. Recap. Nurbs modeling in Rhino</i> <i>Reading: Alex Wall, "Programming the Urban Surface"</i>
2	1/18	Topographic Modeling <i>Tutorial 02. Mesh modeling in Rhino</i> <i>Reading: Karen M'Closkey, Visualizing Landscapes in a Digital Age;</i>
3	1/25	Physical to Digital <i>Tutorial 03. Physical modeling + Photogrammetry</i>
4	2/1	Generative Form <i>Tutorial 04. From Rhino to Grasshopper</i> <i>Reading: Stan Allen, "Field Conditions," in Points and Lines: Diagrams and Projects For The City</i>
5	2/8	Design with Parameters <i>Tutorial 05. Generate and Manipulate Landforms in Grasshopper</i> <i>Reading: Cantrell, Bradley / Adam Mekie, "Introduction," in Codify: Parametric and Computational Design In Landscape Architecture</i>
6	2/15	Form and Performance <i>Tutorial 06. Landform Analysis in Grasshopper</i> <i>Reading: Alexander Robinson, "An Interface for Instrumental Reconciliation, in Innovations in Landscape Architecture</i>
7	2/22	Digital Fabrication <i>Tutorial 07. 3D print and CNC</i> <i>Reading: Lisa Iwamoto, Digital Fabrications</i>
8	3/1	<b>Desk Crit</b>
9	3/8	<b>Mid-Term Project Pinup</b>

Descriptive Modeling

Generative Forms

10	3/15	Spring Break
11	3/22	Time Process <i>Tutorial 08. Unity Introduction</i> <i>Reading: Christophe Girot, "Vision in Motion: Representing Landscape in Time," in The Landscape Urbanism Reader</i>
12	3/29	Alternative Aesthetics <i>Tutorial 09. Unity Terrain and Materiality</i> <i>Reading: Bradley Cantrell, "Terra Automata: Beyond Representation of Landscapes and Ecologies," in Representing Landscapes: Digital</i>
13	4/5	Narratives <i>Tutorial 10. Unity Animation + After Effect</i> <i>Reading: Matthew Potteiger/ Jamie Purinton, "Beginning," in Landscape Narratives</i>
14	4/12	Emerging Practice <i>Reading: TBD</i>
15	4/19	<b>Desk Crit</b>
16	4/26	<b>Desk Crit</b>
Final	5/3	<b>Final Project Submission</b>

Storytelling