Advanced Digital Media for Landscape Architecture: Evolutionary Landscapes

LA 408/508 – Fall Term 2020 Syllabus

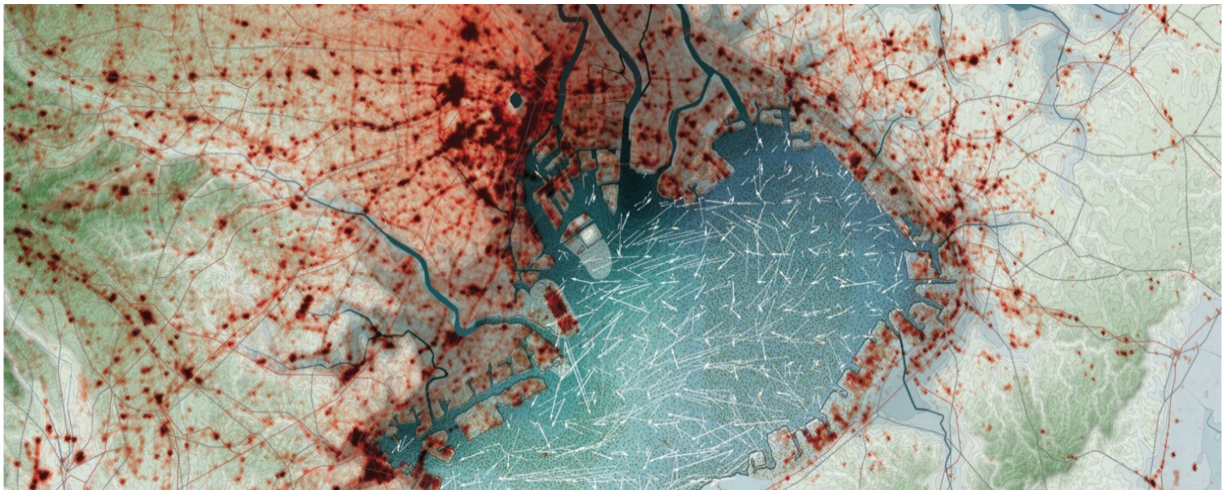

Image: Andrea Hansen, Tokyo Bay Marine Fields, 2009.

SCHEDULE:

Class meets on Fridays from 10:15- 11:45 AM, Remote *(Zoom link to be provided on CANVAS)*

INSTRUCTORS:

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Ignacio Lopez Buson ilopezbu@uoregon.edu

COURSE DESCRIPTION:

The major technological breakthroughs resulting from the digital revolution at the end of the 20th century have allowed for dramatic advancements in the measurement, analysis, and prediction of complex environmental processes that have increased the general awareness of climate change and its consequences.

In addition, growth in computational power and continuously evolving design tools allows architecture, landscape, and engineering professionals to model and evaluate projective scenarios at unprecedented speeds and scales.

As leaders in the design, planning, and articulation of the urban and natural environment, landscape architects must have an active agency regarding digital tools and understand their potential and limitations. Only by engaging in this process can landscape designers continue to remain relevant in the contemporary discussion between professionals, citizens, and decision-makers that shape our physical environment's future.

This course will explore digital tools and techniques to understand some fundamentals of environmental phenomena (wind, water, solar radiation) and analyze how these affect the physical environment. Part of the challenge in working with dynamic systems is balancing the physical reality and representational modeling. To achieve this balance, we will use an iterative computational approach based on evolutionary algorithms. By analyzing the existing conditions on a selected site through digital models, we will use this data to inform the manipulation of the topography. The multiplicity of design solutions will allow students to engage in an evaluation process to determine the best and worst options based on objective data. This class aims to increase students' computational and design skills and teach them the critical agency of digital tools in contemporary landscape design processes.

The outcome of this work will be a series of digital models that will be shown through a final presentation, final digital booklet, and final VR environments.

METHODS:

The course will be structured in four main phases: a short initial bootcamp phase that will introduce the students to all the necessary software and tools (rhino, grasshopper, Twinmotion); an analysis phase for the study of dynamic systems and their impacts; a modeling phase for the manipulation of the topography, and a final visualization phase for the communication of the entire process and the representation of the analyzed data.

Students will tool-up through initial definitions that explore isolated methods for working with dynamic systems in this first phase. This work will be individual to allow for all students to become familiar with the processes.

The second phase will focus on the digital analysis of a system over time to understand variation and constraint areas. Students will form into groups and select a dynamic system to study intensively. The aim will be first to explore the system's bounds spatially, then take these constraints and suggest a new condition that explores an "extreme case scenario."

The third phase will be a modeling phase in which students will generate extreme scenarios and implement their systems in this condition. This extreme scenario will create an environment beyond the system's initial limits to explore change and impacts over time. These models will be generated in GH and rhino.

The fourth phase will produce visualizations that convey the systems' complexity, change, movement, and data. Students will be researching data of dynamic systems and embedding this information onto the spatial conditions they develop. This work will be completed in Rhino, GH, and Twinmotion. A final presentation, a documentation booklet, and rendered VR environments will be the course outcomes.

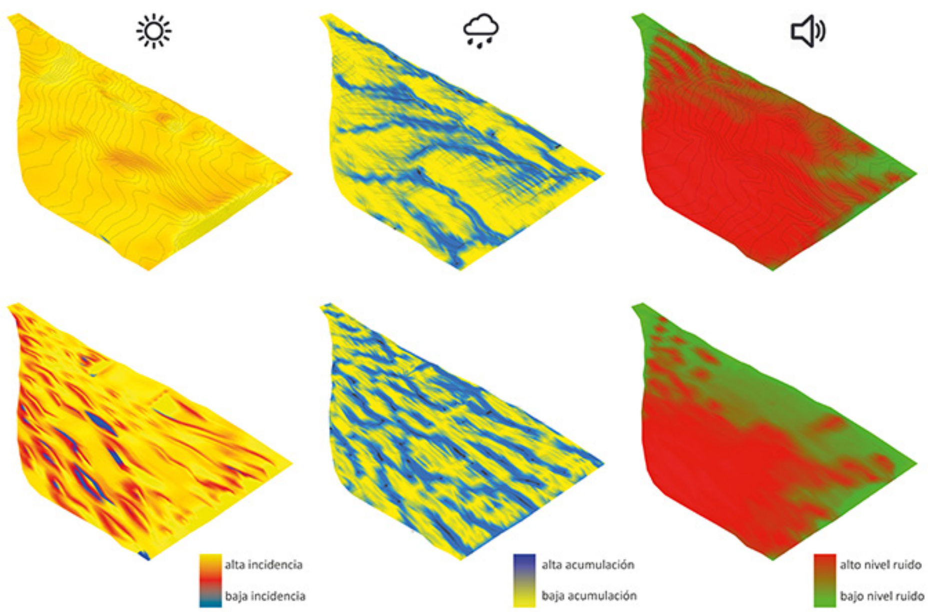

Image: Playa Honda Metro Park competition, MAPS, 2016

HARDWARE & SOFTWARE REQUIREMENTS:

PC or Mac with MS Windows **(Mac users must have bootcamp installed and working before the first day!**)

1. Rhino 6.0 *(Rhino for Mac will not work for tutorials – must be Rhino for Windows)*
2. Grasshopper 3D (GH included in Rhino 6.0)
3. Adobe InDesign
4. Twinmotion (Free for students at www.unrealengine.com/twinmotion)

ATTENDANCE POLICY:

Attendance is mandatory. Lateness will be counted 15 minutes after class has started. Absences will be counted 30 minutes after class has started. Missing an assignment submission will count as one absence. After 3 unexcused absences your grade will be lowered by a grade point for each additional absence if you do not have a written medical, school or religious excuse and should be reported to the instructor prior to the missed class if at all possible. All students are expected to participate in class discussions and develop projects beyond the minimum requirement.

GRADING:

Performance will be graded as noted below. Student work will be evaluated for understanding of each week's lecture information, posted information and learning objective in each assigned exercise. Consistent with all Department of Landscape Architecture studios, this seminar is graded Pass/No Pass with formative and summative feedback throughout the quarter. The following subcategories of "Pass" may be awarded, listed in increasing order of the quality of performance: Marginal Pass, Pass, High Pass, and Pass with Distinction.

10% Weekly Assignments

10% Midterm Presentation

10% Midterm Booklet

20% Final Presentation

30% Final VR Environments

20% Final Booklet

COURSE DELIVERABLES:

The expected outcomes for this course are a **final presentation, documentation booklet, and VR environments**. The documentation booklet should cover the digital models and techniques explored in the class and show detailed levels of annotation and data on the analysis. This booklet should be similar to the final presentation but have more text and annotation. The data should be transcribed into a VR environment produced for the final review that shows the graphic complexity of the dynamic systems processes. The final projects will be completed in groups and the grade of the group will be for each respective student. This work will be a comprehensive application of digital methods explored over the course; therefore students must keep up with the weekly assignments.

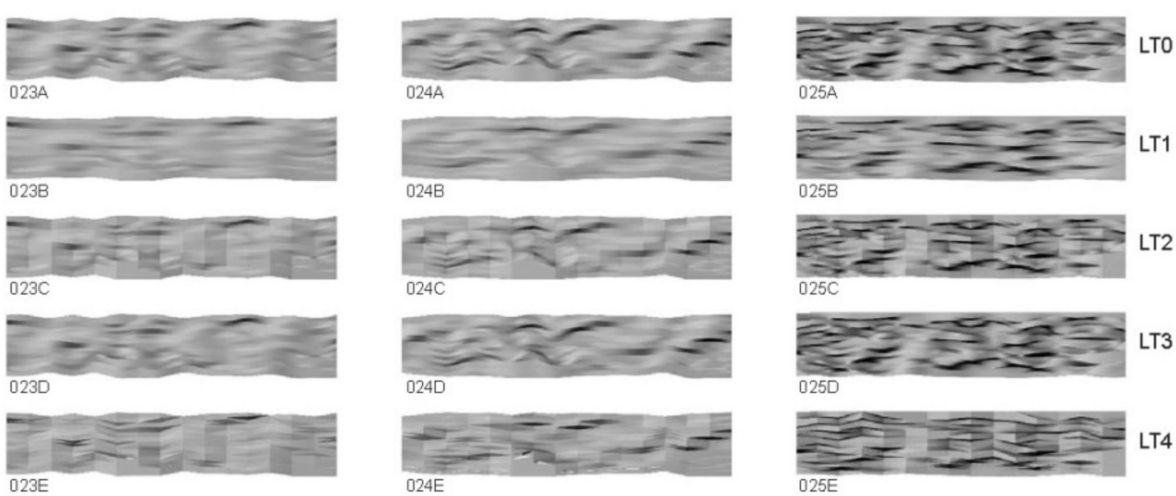

Image: Urban Fluctuations, Mary Polites, Vincenzo Reale, Julia Kolner, 2011

SCHEDULE OVERVIEW

(this schedule may change with notice)

Week 1	Fr	10/02 Bootcamp
Week 2	Fr	10/09 Bootcamp
Week 3	Fr	10/16 Analysis Phase
Week 4	Fr	10/23 Analysis Phase
Week 5	Fr	10/30 Modeling Phase
Week 6	Fr	11/06 Modeling Phase
-----------------	**Fr**	**11/13 Check Point – *Midterm Review* -----------------------------**
Week 8	Fr	11/20 Visualization
Week 9	Fr	11/27 No Class Thanksgiving
Week 10	Fr	12/04 Visualization
Week 11	Tu	12/08 Final Review

COURSE PLATFORMS

CANVAS: General info, schedule, announcements, grades, submissions and links to course resources

Microsoft Teams: For quick questions and informal communication

Zoom: Video calls and reviews

Miro: Reviews and brainstorming

OneDrive: File exchange and work repository

PROJECT OWNERSHIP, PUBLICATION, & PUBLICITY

Work created for credit and/or using the facilities of the School of Architecture and Allied Arts belongs jointly to the school and the student. The AAA reserves the right to document and display all original work for the purpose of documenting student performance as mandated by the National Architecture Accrediting Board [NAAB]. Furthermore, the school reserves the non-exclusive right to use images or likenesses of the work for publicity and display in print and electronic media as well as to submit such work for competitively reviewed exhibitions or to various award programs, The School and its representatives [including faculty and teaching staff] have the non-exclusive right to use such work as illustrations in scholarly and/or technical publications and presentations.

ACCOMODATIONS

If you have a documented need for and anticipate accommodations in this course please communicate with the instructor as soon as possible. You may also request that the counselor for students send a letter verifying the need for accommodations. This is intended to support a accessible learning environment and is in way intended to inhibit privacy.

CLASS FORMAT

Class meeting times will be as stated above unless agreed otherwise beforehand. Students will be expected to be working asynchronously outside of class time to learn the computational techniques of the course. There will be tutorials provided customized to this courses content. Class time will be to discuss the tutorials and developments of the students. Students should be ready to present their studies every class.

SUGGESTED READING

Cantrell, Bradley. *RESPONSIVE LANDSCAPES: Strategies for Responsive Technologies in Landscape Architecture*. ROUTLEDGE, 2017**.**

Cantrell, Bradley, and Adam Mekies. *Codify: Parametric and Computational Design in Landscape Architecture*. Routledge, 2018.

Cantrell, Bradley. Modeling the Environment: Techniques and Tools for the 3D Illustration of Dynamic Landscapes. 2012.

Cheshire, James Uberti Oliver. *Where the Animals Go: Tracking Wildlife with Technology in 50 Maps and Graphics*. 2018.

Lima, Manuel. *Visual Complexity: Mapping Patterns of Information*. Princeton Architectural Press, 2013.

Walliss, Jillian, and Heike Rahmann. *Landscape Architecture and Digital Technologies: Re-Conceptualising Design and Making.* Routledge, 2016.