

Syllabus – PEM368E - 22085

Digital Representation Techniques for Landscape Architecture

COURSE DESCRIPTION AND PURPOSE

The Digital Representation Techniques for Landscape Architecture (DRT4LA) course provides the student with the ability to use basic 3D modeling and digital representation techniques; architectural / landscape architectural representation techniques within the digital realm; 3D modeling to represent and express the potential of interior architectural designs; importing, export, modeling and rendering procedures as basic elements of digital representation; drawing commands and interface for curves and surfaces modeling; rendering engines and techniques; enhancing and composing the rendered images; basic vector presentation techniques.

The main objectives of the course are;

- bringing representation techniques of landscape architecture into the computer realm,
- mastering digital representation methods, which is becoming an essential tool due to increasing demand in landscape architecture practices and academia,
- using 3D modeling and scanning platforms to represent and express the potential of landscape architectural designs.

Upon successful completion of the course students will be able to:

- use basic 3D scanning tools to digitize complex forms,
- use basic computer-aided 3D modeling software to create models for landscape design representation purposes,
- use basic visual coding software to generate 3D models according to design-based inputs/equations,
- use computer-aided-manufacturing software to create scaled physical models of their digital 3D models for model-making,

MODULES

TERM PROJECT

This project will be a cumulative work of semester, which employs analog and digital tools to create 3D models of design proposals and/or digitizing a physical model to benefit from computer-aided modeling software in two-way for landscape design.

Rhino software will be used for creating surfaces and solid geometries to create models in virtual environment for drafting, representation or manufacturing purposes. Studio work will be a session for discussing on parameters, constrains, structures, form-finding and model-making. Students will be making a customized modular tiling for pavement, wall, structure or a conceptual surface for a landscape design project. Grasshopper software will be used to define parameters, attractors, constraints of physical model to create it using Grasshopper plugin.

In the entire semester, the students will gain skills in (1) creating 3D models of landscape design project and its elements, (2) creating constraint-based models of landscape design projects in conceptual context and by taking into consideration the structural, material, construction parameters related to the scale of design.

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The students are expected to develop a landscape design proposal within parameters and constraints specified by environmental conditions, user experience, aesthetics, and accessibility in an existing or fictional environment.

STUDIO

STUDIO HOURS

It is important that students attend the studio and actively participate in all the activities/discussions carried out/held during the course hours. Students are only allowed a maximum of 3 absences. The 4th absence will automatically cause the student to fail the course.

EVALUATION SCHEME

ASSESSMENT CRITERIA	Activities	Quantity	Effects of Grading
	QUIZES	10	% 30
	HOMEWORKS	5	% 30
	MID-TERM THRESHOLD		% 50
	FINAL SUBMISSION	1	% 40

- Studio grades will be announced after 9th week.
- Students who fail to meet the specified mid-term requirements and fall below the midterm achievement score are considered not fulfill the final exam requirements. In this case final grade is assigned as "VF".

WEEKLY SCHEDULE

W	Study	Presentation	Course learning outcomes
1	Introduction: Brief about course, software, requirements, productions.		2,3
2	Introduction to Rhino software		1,2,3,4
3	Q1 & Basic Drawing and Editing Commands		1,2,3,4,6
4	Q2 & Surface and Solid Modeling Tools		1,2,3,4,6
5	Q3 & Topography Modeling		1,2,3
6	Q4 & Site Plan Modeling		4,5,6
7	Q5 & Site Plan Modeling		1-6
8	TERM BREAK		
9	Q6 & Introduction to Grasshopper plugin		1,4,5,6
10	Q7 & Grasshopper: Modeling and Editing Commands		1,4,5,6
11	Q8 & Studio Work: Model-making		1,4,5,6
12	23 April - National Sovereignty and Children's Day		
13	Q9 & Grasshopper: Digitizing the model		1
14	Q10 & Grasshopper: Digitizing the model		1,4,6
15	DISCUSSION & FINAL SUBMISSIONS		
			1,4,6

READING LIST

1. M. Becker, P. Golay, 1999, "Rhino NURBS 3D Modeling" Architectural Press.
2. Kostas Terzidis, Expressive Form: A Conceptual Approach To Computational Design, 1st Ed. (Routledge, 2003).