
M
two
the 2010/11 CAAD MAS

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two
any form

Module two is an exploration of procedurally generated forms, free of any architectural constraints. Hammer and chisel are abstracted and replaced by formulas and algorithms. Material is initially reduced to vertices, edges, and faces, before being reconstituted though a digital fabrication process.

No longer is a single object the focus of our attention. Instead we are concerned with generating entire families of forms, using processes who's potential is iteratively explored. The design itself does not take place on the level of the output, but rather on the level of the procedures that generate the output. Complexity is no longer an obstacle that needs to be eliminated. Instead we view it as a quality that may emerge from even the simplest processes. The diversity and level of detail that can thus be achieved are unthinkable using design standard processes.

In addition to exploring generative processes, module two also serves as an introduction to programming. Students will use Processing, a derivative of Java that was conceived particularly to create images, animations, interactions, and 3D form.

The program is divided into three distinct weeks:

1. Introduction to Programming, taught by Hua Hoa.
In the first week students will become familiar with basic programming concepts using the Processing language. Students will complete a series of mini-exercises:
- The re-creation of a 20th century painting using code
- The design, development of and implementation of a simple video game
- The generation of a parametric facade for a buildingClasses will focus not only on programming concepts, but also on means to visualize, fabricate, and more generally communicate the coded object.

2. Workshop One: From Idea to Code
by Karsten Schmidt, aka Toxi , of Postspectacular

Karsten Schmidt will lead the first of two workshops focused on generative processes. He will introduce students to a variety of 3-dimensional geometrical concepts, including both mesh and voxel-based forms. Students will explore concepts such as catenary meshes, particle systems and spring systems. The workshop will also serve as an introduction to object-orientated programming, and it will make use of extensive open source libraries. Students will be asked to explore a generative process of their chosing in more detail, and to develop permutations of forms based on this process.

3. Workshop Two: From Code to Fabrication
by Jessica Rosenkrantz and Jesse.Louis Rosenberg of Nervous System

The second workshop, taught by Nervous System, will continue the exploration of generative processes and will focus specifically on how their output can be fabricated. Students will become familiar with to various morphogenetic systems such as cellular automata and reaction-diffusion processes. Nervous System will draw parallels with natural processsses, demonstrating how these can be simulated, controlled, and ultimately modified to express design ideas and to meet specific performative criteria. Students will produce permutations of an everyday 3D object by applying reaction-diffusion process, and they will each print one of these objects using the 3D printer.

Workshop Critiques

Students will present their finished projects on the Monday after the workshop in front of the CAAD department. The workshop leaders will join via video-conferencing.

Introduction and Tutorials

Monday, 08.11.2010		
9:00 – 10:00	Introduction to Module 2	Michael Hansmeyer
10:00 – 12:00	Introduction to programming - Part 1: Variables, loops, drawing commands	Hua Hao
13:00 - 17:00	Assignment 1: Recreate a 20th century work of art	
Tuesday, 09.11.2010		
9:00 – 12:00	Introduction to programming - Part 2: Nested loop, conditionality, interactivity	Hua Hao
13:00 - 14:30	Presentation recent work	Benjamin Dillenburger
14 :30 - 17:00	Assignment 2: Interactive components	Hua Hao
Wednesday, 10.11.2010		
9:00 – 12:00	Introduction to programming - Part 3: Arrays, functions	Hua Hao
13:00 - 17:00	Assignment 3: Design a simple video game	
Thursday, 11.11.2010		
9:00 - 12:00	Introduction to programming - Part 4: Using the processing libraries	Hua Hao
13:00 – 17:00	Assignment 4: Design a parametric facade, and use the laser cutters to fabricate it	
Friday, 12.11.2010	Review of week 1, time to finish assigments	

Workshop 1: From Idea to Code (Karsten Schmidt aka Toxi)

Monday, 15.11.2010		
9 :00 - 16:00	Processing recap / Intro to 3D	Karsten Schmidt
16:00 - 17:30	Recent work - Postspectacular Main Auditorium, HIL E 3	Karsten Schmidt
Tuesday, 16.11.2010		
9:00 - 17:00	Introduction to OOP	Karsten Schmidt
Wednesday, 17.11.2010		
9:00 – 17:00 pm	Toxiclibs, various generative concepts	Karsten Schmidt
Thursday, 18.11.2010	Independent work on design task	Hua Hao
Friday, 19.11.2010	Independent work on design task,	Hua Hao
17:00 - 18:30	Workshop presentation, videoconference	CAAD Team, Karsten Schmidt

Workshop 2: From Code to Fabrication (Nervous System)

Monday, 22.11.2010		
9:00 – 16:00	Generative processes in nature	Nervous System
16:00 - 17:30	Recent Work - Nervous System Auditorium - HCI J4	Nervous System
Tuesday, 23.11.2010		
9 :00 – 17:00	Reaction-diffusion processes	Nervous System
Wednesday, 24.12.2010		
9 :00 – 16:00	Reaction-diffusion processes	Nervous System
16:00 - 18:00	Discussion of final design task	
Thursday, 25.11.2010		
9:00 – 13:00	Independent work on final design	Hua Hao
13:00 - 15:00	Complexity and Its Neighborhood HPZ Floor F	Klaus Wassermann
Friday, 26.11.2010		
9:00 – 17:00	Independent work on final design	Hua Hao

Final design review on Tuesday, 30.11.2010, at 10:00