Course Syllabus

International Study Program 2019:
Innovation and Sustainability in Engineering and Environmental Planning - Impact of Key Technologies on Environment and Society

Course 1: Methods of Visualization Workshop A
Mixed Methods for Landscape Modeling – Analog and Digital

Program description

As one of the countries leading technical innovation globally, Germany provides an interesting case study for examining the impact of innovation on the course of environmental and social change. The International Study Program “Innovation and Sustainability in Engineering and Environmental Planning – Impact of Key Technologies on Environment and Society” in Osnabrück, Germany explores this question, focusing in particular on sustainability innovation. The program consists of three parts. In Course 1, students choose one of two hands-on workshops on visualization. Course 2 surveys recent technological developments in five smaller units dedicated to different research areas. The accompanying cultural module “Living Society” contextualizes the innovation trends explored in Courses 1 and 2 in terms of German culture and history.

Through lab and project work, theoretical input, discussion and company visits, students gain a comprehensive view of innovation processes which transcend disciplinary borders and deepen their understanding of the role and scope of their own discipline therein. The program is designed for students from various engineering and planning fields. In this international program, visiting and local students participate together, enabling intercultural exchange and offering an unforgettable experience abroad.

Course content

This workshop examines the physical-digital workflow from additive manufacturing to 3D scanning to subtractive working methods. It imparts the basics of CAD/CAE, materials technology and testing, enabling students to design and produce their own landscape models. Students will learn about the advantages and disadvantages of different methods for approaching a concrete design task and then apply them for their own purposes. The workshop will be accompanied by impulse lectures on the respective computer-aided methods in landscape architectural model making, but clearly tends towards analog techniques.

The following programs will be used:
- Estlcam (CNC toolpath generation)
- WinPCNC (CNC control)
- Ideamaker (3D print preparation)
- Vectorworks / AutoCAD / SketchUp / add-on modules (digital model building)
- Arten Studio 11 (post-processing 3D Scan)

Competence goals

Students who have successfully completed the course have a basic understanding of various methods of analog and digital modeling, including their strengths and weaknesses in the context of landscape architectural applications. Furthermore, they are able to discuss current methods and developments within the field in oral and written form.

Methods

Lectures, Lab work

Prerequisites

Advanced knowledge in CAD based modelling and an enjoyment for experimental design tasks are desirable but not mandatory.

Lecturers

Daniel Theidel, David Theidel

Literature for Further Reading

- Werkzeuge des Entwerfens / Wittmann, Barbera / 2018
- Werkzeuge für Ideen: Einführung ins architektonische Entwerfen / Gänshirt, Christian / 2011
- Modell, Architektur, Design: die Lehre vom Architekturmodellbau ; die in diesem Buch gezeigten Modelle sind ausschließlich Arbeiten von Studentinnen und Studenten / Lüdtke, Burkhard / 2002
- Die Intelligenz der Hände. Analoge und digitale Architekturdarstellung in der zeitgenössischen Entwurfsmethodik / Fischer, Friedrich Maximilian Wilhelm / 2015

Exam and grading

The basis for grading is as follows:

- Individual active participation and engagement with course content (60%)
- Workshop results / presentation of results (40%).

The usual 10 point scale will be used, 90% for an A, 80% for and B etc.

Duration

1-week-long intensive workshop (June 3 – June 7)

Frequency

Yearly

Course Language

English