ARCH 5590.01: TOPICS IN BUILDING TECHNOLOGY

Payne

An introduction to the basics of Revit Architecture software. At the end of the course, students will be able to navigate the user interface, complete basic modeling tasks, and create/print sheets.

1.5 credit hour

ARCH 5590.01: TOPICS IN BUILDING TECHNOLOGY

Baumberger

Title: **3D printing and CNC machining**

This workshop-based course serves as an introduction to equipment available in the MAT/FAB Lab at the Knowlton School of Architecture with an emphasis on the two most widely used technologies: 3D printing and CNC machining.

The CNC machining section will address the entire workflow of a project from digital model and drawing through the running of a job. You will learn what tools to use when, how to properly prepare and hold down material stock, calculate spindle RPMs and feed rate of system, how to generate effective and efficient tool paths and how to operate the CNC interface.

The 3D printing section will briefly look at the basic principles of additive manufacturing and a range of existing technologies before focusing on the two systems used at the KSA: Fused Deposition Modeling (FDM) and binder jetting (3DP). We will address effective modeling practices, working with STL files and troubleshooting problem parts.

Time permitting other equipment will be covered including vacuum thermoforming, CNC foam cutting and 5-axis CNC machining.

This course is intended for currently enrolled KSA students that have completed their first year and possess a working knowledge of the modeling software Rhinoceros. Students interested in becoming lab assistants are highly encouraged to enroll.

1.5 credit hour

ARCH 5590.01: TOPICS IN BUILDING TECHNOLOGY

Malmstrom

Often times thought as an artificial device by which to replace a body part, prostheses contain the possibilities to surpass their predecessors. In the TED Talk “My 12 Pairs of Legs”, Aimee Mullins speaks of the limitless possibilities that her artificial legs offer her which the general public could never obtain and with prosthetic running devices, so-called ‘disabled athletes’ are able to outperform their ‘able-bodied’ counterparts.

This course will explore some of the plug-in ‘prosthetic’ software options which rely upon Rhinoceros 5.0 to operate while expanding design possibilities not offered within the default interface. Broken into three primary phases (Conceptual Design, Fabrication, and Post-production) each chosen software will aid in one (or several) of these design phases ranging from Grasshopper as a conceptual design tool, through SectionTools and RhinoNest for expediting the fabrication process, to VRay as a post-production rendering application. Students will not only be taught the basics of each plug-in but learn to recognize opportunities the software has to offer. Each week we will focus on a different plug-in while incorporating all into a single design exercise culminating in a small scale laser-cut/3D printed object.

**Prerequisites:** Knowledge of the Rhinoceros 5.0 interface

1.5 credit hour