

PATTERN YOUR LIFE

Digital Fabrication Workshop

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Tools & Materials

During the course, computers, software, CNC machines, Heliodon, production materials and tools for sketching and freehand drawing will be used.

Students are invited to bring their own PC and freehand drawing tools.

Software will be provided on a trial basis during the course.

CNC machines, Heliodon and production materials are provided by the University.

Program

Tuesday, January 30th

3:15 PM - 5:30 PM (3 hours) class ICT-702

Introduction

Introduction to the objectives of the course and summary presentation of the programme in the phases of conception, design, digitisation, prototyping and production and verification of a pattern. The tools are CAD and CAM software, CNC machines, Heliodon.

Digital Fabrication

Digital Manufacturing described through the CAD/CAM route and all stages of digitisation, prototyping and product manufacturing. Overview of the potential of this technology through examples in architecture, crafts and art.

The Pattern Theory

The exercise proposed throughout the course deals with the development of a pattern. In this theoretical lesson, the deeper meaning of the pattern is explored, between biology, philosophy and history.

1° exercise: Pattern Research and Manual Sketch

The design of a pattern is the first exercise proposed. Each student engages in a research phase and then chooses and reworks a pattern. A freehand sketch is produced. Drawing material is required.

Thursday, February 1st

9:00 AM - 11:45 AM (4 hours) open area ICT-714

Software Introduction and Installation

Introduction to CAD (Computer Aided Design), CD (Computational Design) and CAM (Computer Aided Machine) software.

Digital Fabrication Techniques

Digital Manufacturing allows the reproduction of ancient construction techniques such as carving, marquetry, bas-relief engraving and also innovative techniques such as waffle, waves, layering. An overview is given of the techniques tried and tested and examples of these in the fields of architecture, craft and art.

2° exercise: Pattern Digitalization

The pattern design work continues with the digitisation phase of the project using digital software. Each student develops a pattern design digitally.

1:00 PM - 4:45 PM (5 hours) open area ICT-714

CNC Machines

CNC machines are Computer Numerical Control Machines. They translate digital design data into machine commands via the CAD/CAM process. Here is an overview of the different machines divided into cutting, subtraction and addition machines.

Materials

The materials for Digital Fabrication are related to the characteristics of the reference CNC machine, they differ in format and size.

Digital Fabrication Prototype

Prototyping is the adaptation of the digital design to the requirements of the CNC machine and the material used for production.

3° exercise: Pattern Prototype

Each student works on prototyping his or her own pattern design in relation to the chosen material and CNC machine.

Friday, February 2nd

3:30 PM - 6:45 PM (4 hours) class ICT-702

4° exercise: Pattern Fabrication

Guided production of pattern designs.

Thursday, February 8th

9:00 AM - 11:45 AM (4 hours) open area ICT-714

Algorithmic Design

Introduction to the philosophy and practice of Algorithmic Design.

Solar Morphogenesis

In Algorithmic Design, the parameters become the generators of form, precisely morphogenesis. In this case, the solar parameters are deepened.

5° exercise: Shadow Pattern Parametric Design

Students are invited to organise themselves into groups, so as to design a new pattern through solar morphogenesis. The result is a play of shadows that defines a pattern.

1:00 PM - 4:45 PM (5 hours) open area ICT-714

6° exercise: Shadow Pattern Prototype

Shadow Pattern prototyping

7° exercise: Shadow Pattern Production

Shadow Pattern Production

Friday, February 9th

3:30 PM - 6:45 PM (4 hours) class ICT-702

8° exercise: Heliodon Shadow Study

Heliodon is a shadow analysis tool. Patterns modelled on solar parameters and realised in digital fabrication are analysed with Heliodon to verify the function of the shadow play envisaged in the design.

Tuesday, February 13th

3:15 PM - 5:30 PM (3 hours) class ICT-702

Students Presentation

Students are invited to present their projects.