lapa
Laboratoire de la production d`architecture | Prof. Harry Gugger
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ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

PROJECT ENAC – EPFL/ECAL Lab:

Aesthetics + Logic : Digital Design + Production

Basis

The methods and processes of design and production are changing. Computer Aided Design (CAD) has dramatically altered the working process of design. New digitally driven machines, originally developed for large industry, allow for precise fabrication of complex parts direct from the digital data. Increased availability of this technology is now allowing for its use in architecture, engineering, and industrial design.

With new technologies come new possibilities. Computers are computation machines, used to rationalize complex processes from business to science. Computers are also an effective artistic medium, enabling dynamic and complex expression, and especially effective in the visualization and processing of complex forms.

The main theme of this course will be this intersection between these two influential design goals: order and beauty within our contextual environment.

Objectives

This ENAC "*Design & Build Together*" Masters Project aims to give the participants first hand experience with digital design, and production tools to develop a full scale project. Participants in this course will:

- Explore the relationship between concepts of beauty and function, and relate them to the design parameters of aesthetics and logic.
- Develop skills and expertise in the application of digital design and CNC production machines.
- Learn how to develop an overall design and production strategy and process for a project.
- Design, rationalize, produce and construct a final built project at the 1:1 scale using the digital tools and machines employed in the course.

This course is a multidisciplinary collaboration between ENAC and ECAL.

Programme

The theme of study for Spring 2008 will be "Aesthetics and Logic" with a specific focus on developing expressive and complex designs using digital design and production tools. The course will be comprised of five lectures, five skill building workshops, and the final project.

The final project will be the design, fabrication, and construction of a 1:1 scale structure. The design, theme, and system will be developed by the participants, and will be then produced using the computer controlled fabrication equipment at the EPFL. This work will be made up of individual components, coordinated into a group work. The project will take place for one full week immediately after the end of the semester.

The project will be documented by a final report, which will illustrate the research and development of the project in relation to the chosen theme.

Technology

Design technologies to be investigated in the course:

- CAD modelling, rendering, and
- Parametric design
- Algorithmic, and generative CAD programming
- 3D-scanning, and reverse-engineering

Fabrication technologies to be investigated in the course:

- Laser and 2d CNC cutting
- Rapid Prototyping
- Computer Numerically Controlled (CNC) milling.
- Robotic 5 axis machining.

Evaluation

Participants will be evaluated on four criteria:

- Participation in the course and workshops
- Assignments (2 short + the final built project)
- Individual progress + development over the semester
- Contribution to the final report

Each student will be evaluated individually with consideration given to their discipline, goals, and personal expertise. All students are expected to work in a group, as modelled on teamwork in professional practice.

Information

- Course website : http://lapa.epfl.ch/page70172.html
- Course time: **Tuesdays -10:00 to 12:00**
- Course period: 19/02/08 to 27/05/08
- Project week: 02/06/08 to 08/06/08
- The working language for this course is **English.**
- Enrolment is limited to 15 students.

There are NO prerequisites for this course.
All participants are expected have a basic working knowledge of computers. CAD experience is an asset.

For enrolment students are requested to view:
http://wiki.epfl.ch/lapa-ddp

Teaching

Responsible: **Russell Loveridge**, (lapa) chargée de cours
Prof. Harry Gugger, (lapa)

Coordination: **Alexis Georgacopoulos** (ECAL)

Serpentine Pavilion 2005: Á. Siza & E. Souto de Moura. Image: C. Baumans