

AD2 – Architecture et Design (module 2)

Lecturer

Davut Erkan (Coordinator)

Course mnemonic

ARCH-P8105

ECTS credits

10 credits

Language(s) of instruction

French

Course period

Second term

Campus

Flagey

- › Bringing attention on the multidisciplinary character of architecture as a practice.
- › Fomenting fast and creative exchange of ideas into built forms and highlighting the potential of innovation as an extraordinary approach to projects and practices.
- › Learning to manage the resources involved into digital design and simulation.
- › Learning to theorize and to develop a methodology based on research and production.
- › Learning to develop business models.
- › Learning the process of documenting, editing, and publishing a portfolio and a research book.

Course content

AD_Q2 (Digital Architecture) is an *immersive, cross-disciplinary*, research orientated architecture unit which investigates on the correlations between material, form, and structure through the rigorous implementation of computational methods for design, analysis, and fabrication, coupled with analogue modes of physical experimentation and prototype making. Each cycle of the programme devises custom-made architectural processes through the creation of novel associations between conventional and contemporary design and fabrication techniques. The research culminates in the design and fabrication of a one-to-one scale prototype realized using robotic fabrication techniques, with the aim of integrating of form-finding, material computation, and structural performance.

The programme is structured in two stages:

- › PART 1: participants are introduced to core concepts of material processes, computational methods, and digital fabrication techniques. Basic and advanced tutorials on computational design and analysis tools are provided. The programme performs as a team-based workshop promoting collaboration, research and 'learning-by-experimentation'.
- › PART 2: participants propose design interventions based on the skills and knowledge gained during phase 1 and supported by scaled study models and prototypes. The fabrication and assembly of a full-scale architectural intervention with the use of robotic fabrication techniques will then unify the design goals of the programme.

Objectives (and/or specific learning outcomes)

- › Immersing students within an entirely digital production environment.
- › Challenging the notion of authorship with principles of self-organization and emerging collaborative patterns.

Pre-requisites and co-requisites

Required knowledge and skills

This year's course will embark students on a 12-week course throughout which they will be researching a subject of their choice within the list below, with the objective to develop an architecture project.

The studio will be focusing on a series of research subjects and live projects selected and conducted individually by each student. Details of the program will be presented during the studio.

Students will receive an introduction course on Rhinoceros 3D & Grasshopper environment, as well as about parametric 3D modelling, among other tutorials and lectures.

In addition, this year's students will have the opportunity to take part to a parametric design international workshop organised with IAAC (<https://iaac.net/>) during the faculty PIW (SIP/ Pedagogic Innovation Week)

Teaching method and learning activities

Students will be:

- › Exploring emerging technology related subjects
- › Researching, understanding, and theorising
- › Confronting & criticising ideas and concepts
- › Designing an architecture project, drawing, rationalizing, refining, detailing.
- › Simulating 1:1 scale fabrication & prototyping
- › Documenting, drawing, writing & publishing
- › Curating & exhibiting

Contribution to the teaching profile

Research subjects are free but are subject to approval and should be **architecture** related and include **digital fabrication processes**.

Topics should include:

- > Architecture, Design & Engineering.
- > Rapid prototyping and digital fabrication
- > Materials research & recycling
- > Electronics and robotics.
- > Computing, Coding & Software development (Coding, BIM, CAD, CAE, CAM);
- > Artificial Intelligence.
- > Biomimetics.
- > Permaculture.
- > Smart and Nano technologies.
- > IOT.
- > Virtual reality/ Augmented reality & Mixed reality.
- > Video games and gamification.

Guest speakers & critics will include:

A number of guest critics, among others, will be involved into the studio throughout the semester.

- > Architects, Engineers, and designers.
- > Scientists.
- > Academics, Tutors & Researchers.
- > Fabers & Makers.
- > Professionals.
- > Industrial experts & specialists.
- > Stake holders.

References, bibliography and recommended reading

[media;pdfviewer;URL=[id-image]97178[/id-image]#DOWNLOAD=0#STYLE=PAGEmedia;pdfviewer]

Course notes

Université virtuelle

Other information

Place(s) of teaching

Flagey

Contact(s)

Davut Erkan

David.Erkan@ulb.be

Evaluation method(s)

Oral presentation, Portfolio, Project, Personal work and Practice work

Evaluation method(s) (additional information)

- > Ability to bring a clear architecture response to the quadrimester exercise.
- > Relevance of the subject, state of the art, and quality of the principles developed implications and project outcome.
- > Ability to develop a critical attitude towards the subject treated; risk-taking.
- > Ability to fully explore a subject, to understand it, to transcend it and to reclaim it for one's own objectives.
- > Ability to develop a project approach and a work methodology.
- > Ability to produce a complete response to the chosen subject.
- > Ability to produce a research paper about the chosen subject (2500 words min.).
- > Ability to use digital tools (CAD, parametric and algorithmic 3D modelling, etc...) for architecture production purposes, drawings, details, prototypes, simulation...
- > Ability to document and publish the design process.
- > Ability to produce a quality publication about one's work.
- > Ability to make good use of digital tools design purposes (software, machines, electronics..).
- > Quality of the writings, research paper, and project narrative (form, content, methodology, referencing).
- > Quality of the design, drawings, details, rendering and production.
- > Quality of the architecture models, studies, mock-ups and prototypes (functionality, aesthetics and quality, realism...).
- > Graphic and verbal presentation quality.
- > Ability to stage and exhibit one's work.

Determination of the mark (including the weighting of partial marks)

50% of the mark is determined on the work produced by the students during the semester which I evaluate at every key stage (subject proposal (10%) sketch design (15%), outline design (25%), final design (50%).

50% of the mark is issued on the final jury presentation; it is determined by the sum of the notes of the members of the jury. I only evaluate the work of the students during the semester. I don't evaluate the jury presentation

Main language(s) of evaluation

English and French

Programmes

Programmes proposing this course at the faculty of Architecture La Cambre Horta

MA-ARCH | Master in Architecture | finalité Professional/unit 1

