60 ECTS Master’s degree

Parametric design in Architecture
Technology efficiency through computational design

Complexity integration
This poses a critical evolution of computational design towards a more challenging and self-demanding commitment to environmental constraints.

The emergence of ICT has supposed a paradigm shift for architecture. Parametric design, digital manufacturing and prototyping are revolutionizing the scene of the 21st Century architecture and opening doors to new models of sectoral development and new multidisciplinary professional profiles able to meet the challenges of this socio-economic change.

The architecture project is a complex process that should allow tracing knowledge management with design in an operative way. We call parameters to all categories of information that affect decision-making in the development of a project. This is the goal of Parametric Design. The lesson will be to know which parameters interact and what is the system with all variables / categories involved in the process. The lessons will be given on current software tools (Grasshopper, Revit, Dynamo, etc) which allow to change the design process, transforming architects in builders of systems and not just modellers.

Ramon Sastre Sastre. Master’s Director

Professional oriented structure
The Master is organized into two four-month postgraduate courses, 15/16 weeks each, which can be taken together to obtain the Master degree, or separately. For the Master’s degree it is also compulsory to register for the Master Thesis (6 ECTS). Each annual postgraduate course is structured in a thematic module of 27 ECTS.

Acquisition of emergent design skills
Once the students have qualified the 60 ECTS of MªPDArch they will:

- Be fluent in Parametrics and Algorithmics.
- Acquire both a solid theoretical and technical framework and a strong set of practical parametric design skills.
- Understand digital design paradigm shift, the impact in our society and its state of the art technology.
- Be able to lead cutting-edge architectural performance driven design teams understanding the integration of efficiency and design processes.
- Develop a critical attitude in the design itself, so that the knowledge gained will serve for a better, more sustainable and comfortable architecture.
- Acquire a work niche, a new form of enterprise, taking advantage of the entrepreneurial nature of future professionals in parametric design.

Application before September 2015
Register at http://www.talent.upc.edu/ing/professionals

Syllabus

PG1. Digital design and fabrication

1. Complexity integration
We propose a critical evolution of computational design towards a more challenging and self-demanding commitment to environmental constraints.

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PG1.1 6ECTS
Parametric Geometry

Study of mathematical modeling of shapes and objects, with architectural examples.

PG1.2 6ECTS
Digital Fabrication

Theory and use of tools, both theoretical (architectural) and practical (hardware) that have allowed the emergence of this type of architectural design.

PG1.3 6ECTS
Architecture in the 21st Century. From Sign to Algorithm?

Perceiving the historical process that has led to a type of architecture that has become the paradigm of modernity in the early twenty-first century.

PG1.4 6ECTS
Studio 1. Information and systems

Learn how to approach architectural design through complexity negotiation.

PG2. Performance parametric design

PG2.1 6ECTS
Parametric Design with BIM

Practical use of existing BIM architectural software in parametric design.

PG2.2 6ECTS
Algorithmics in Technology in Architecture

Study of parametric algorithms and the application of algorithmic design to the structural, material and collaboration process.

PG2.3 6ECTS
Parametric Design in Planning and Landscape

Design processes of various parameters, from the point of view of what they report us about the city or territory.

PG2.4 6ECTS
Studio 2. Postproduction and building

Learn how to approach architectural design through complexity negotiation.