



## Course Syllabus

<b>Course Code</b>	<b>Course Title</b>	<b>ECTS Credits</b>
ARCH-572DL	Computational Design Processes	10
<b>Prerequisites</b>	<b>Department</b>	<b>Semester</b>
None	Architecture	Fall
<b>Type of Course</b>	<b>Field</b>	<b>Language of Instruction</b>
Required	Architecture + Computation	English
<b>Level of Course</b>	<b>Lecturer(s)</b>	<b>Year of Study</b>
2 <sup>nd</sup> Cycle	TBA	1 <sup>st</sup>
<b>Mode of Delivery</b>	<b>Work Placement</b>	<b>Co-requisites</b>
Distance Learning	N/A	None

### Objectives of the Course:

The main objectives of the course are to:

- To introduce the participants to advanced computational methods through the use of associative modelling (parametric design)
- To help participants develop a computational design approach through applying hierarchical process as a basis to computation
- To introduce the basis of computer programming
- To encourage students to use emergent and cutting edge tools to aid their design and creativity.

### Learning Outcomes:

After completion of the course students are expected to be able to:

1. Understand the use of advanced digital design tools for generation, evaluation and representation
2. Understand in theoretical and practical level the use of parametric-associative design tools
3. Understand the potential embedding the performance parameters into your designs and utilize it to guide the latter.
4. Understand the correlation between advanced digital design and digital fabrication

**Course Contents:**

1. Introduction to parametric-associative design logic
2. Basics of computational geometry
3. Introduction to Programming
4. Advanced parametric-associative modelling
5. Introduction to Performance Based Design
6. Digital fabrication using associative modelling Growth and Form in Nature
7. Natural Patterns and their formations

**Learning Activities and Teaching Methods:**

Lectures, Computer Demonstrations, Workshops, Tutorials, Discussions, Presentations, Practical Exercises and Assignments

**Assessment Methods:**

The lecture course is assessed by the submission of coursework (assignments):

- Presentations and short writings that will accumulatively set personalised positions on a range of computational design approaches or methods (as introduced via lectures, directed readings and research).
- Short design project and presentation assessing the participants' ability to conceptualise and design parametric models and their ability to understand the assembly process.
- Final Digital Project and presentation exam. The participants are required to demonstrate their digital design competencies through submitting a final design project and participating in an exam.

**Required Textbooks / Reading:**

Title	Author(s)	Publisher	Year	ISBN
Computational Design Thinking	Menges, Achim	John Wiley & Sons	2011	978-0470665657

**Recommended Textbooks / Reading:**

<b>Title</b>	<b>Author(s)</b>	<b>Publisher</b>	<b>Year</b>	<b>ISBN</b>
AAD_Algorithms-Aided Design - Parametric strategies using Grasshopper	Tedeschi, Arturo	Edizioni Le Pensur	2014	978-8895315300
Architectural Geometry	Pottmann, Hemut et al	Bentley Institute Press	2007	978-1934493045