



Course Syllabus

Course Code	Course Title	ECTS Credits
INT-362	Advanced Digital Design	4
Prerequisites	Department	Semester
INT-262	Architecture	Spring
Type of Course	Field	Language of Instruction
Required	Architecture	English
Level of Course	Lecturer	Year of Study
1 st Cycle	Michail Georgiou	3 rd
Mode of Delivery	Work Placement	Corequisites
Face to face	N/A	N/A

Course Objectives:

The main objectives of the course are to:

- Introduce advanced capabilities of digital design tools for generation, evaluation, and representation
- Present the theoretical and practical framework of advanced digital design tools
- Facilitate the use of materials, lights and animation techniques for digital representations
- Encourage participants to utilize emergent and cutting edge tools at various stages of the design process, through lectures and hands-on demonstrations.
- Advance participants' digital fabrication skills by encouraging the use 3d printer, CNC, and laser cutting equipment to realize their projects
- Introduce the concept and potential of computer graphical programming for designers through presentations, case studies and invited guest lecturers.
- Develop computational design thinking through applying hierarchical process as a basis to design
- Modify and produce basic graphical algorithms for design through homework, assignments and projects

Learning Outcomes:

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

1. Identify the applications of advanced digital design tools for generation, evaluation and representation
2. Describe in theoretical and practical level the use of digital design tools

3. Modify and Create basic graphical algorithms to address specific requirements at various stages of the design process
4. Formulate design workflows involving advanced digital design tools and digital fabrication methods
5. Evaluate the need for application of computational design according to the design problem.
6. Identify the relation between parametric-associative design tools and performance-based design.

Course Content:

- Advanced 3d modelling
- Textures, materials, lights, renderings, animation
- Theoretical and historic background and applications of computational design
- Introduction to parametric-associative design logic
- Introduction to Graphical Programming Editors
- Basics of computational geometry
- Elementary Mathematical Concepts for Computational Design
- Designing with Lists
- Parametric Setting Out Modeling
- Basic Data extraction and Visualization
- Introduction to Performance Based Design
- Digital fabrication using computational modeling

Learning Activities and Teaching Methods:

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

Assessment Methods:

Classroom participation is assessed, as well as projects, assignments, midterm and final exams.

Required Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Grasshoper Primer 3rd Edition	ModeLab	Robert McNeel & Associates	2017	http://grasshopperprimer.com

Lecturer's Notes / Presentations	Michail Georgiou			
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Recommended Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Computational Design Thinking	Menges, Achim	John Wiley & Sons	2011	978-0470665657
AAD_Algorithms-Aided Design Parametric Strategies Using Grasshopper®	Tedeschi, Arturo	Edizioni Le Pensur	2014	978-8895315300
On Growth and Form	D'Arcy Wentworth Thomson	Cambridge University Press	1992	0521437768