University of Nicosia

Course Syllabus

Course Code	Course Title	ECTS Credits
ARCH-262	Advanced Computer Aided Design	4
Prerequisites	**Department**	**Semester**
ARCH-261	Architecture	Spring
Type of Course	**Field**	**Language of Instruction**
Required	Architecture	English
Level of Course	**Lecturer**	**Year of Study**
1st Cycle	Michail Georgiou	2nd
Mode of Delivery	**Work Placement**	**Corequisites**
Face to Face	N/A	N/A

Course Objectives:

The main objectives of the course are to:

- Advance participants' theoretical framework and develop critical thinking by analyzing, presenting and discussing applications of computational design through case studies.
- Develop fluency in various CAD software through hands on application.
- Teach participants advanced modeling techniques through examples and homework assignments.
- Teach participants to produce both 2d and 3d files for digital fabrication.
- Encourage the utilization of digital fabrication techniques through the use of 3d printing, laser cutting and milling machines.
- Develop awareness of materials, their possibilities, capabilities and physical restrictions, through digital fabrication experimentation and material processing.
- Teach participants to identify and implement all necessary procedures to take a design idea from envisioning through to final physical prototype.
    - Provide an understanding of technological implications on design procedures and digital fabrication, through discussions, presentations and site visits.

Learning Outcomes:

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

1. Demonstrate advanced skills in digital design
2. Device advanced computational workflows involving various CAD software and apply them to individual projects to address specific design requirements
3. Interpret materials, possibilities and restrictions

4. Apply concepts of 3d printing, computer controlled cutting and computer controlled machining for testing and realizing design ideas
5. Analyze spatial conditions that respond to performative and aesthetic criteria utilizing digital design tools and methods.

Course Content:

- Advanced digital design workflows
- Advanced Geometries Modeling (NURBS)
- Point/Free Modeling
- Advanced Modeling using Plugins
- Panelisation techniques
- Exporting and preparing files for Fabrication – CAD-CAM workflows
- 3D Printing
- Laser Cutting
- CNC

Learning Activities and Teaching Methods:

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

Assessment Methods:

Presentation

Homework

Final Project

Attendance

Required Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Rhinoceros v5.0, Level 2, Training Manual	P. Golay, J. Hambly, M. Fugier, L. Ooosterveen	Robert McNeel & Associates	2015	https://www.rhino3d.com/download/rhino/6.0/Rhino5Level2Training

Lecturer's Notes / Presentations	Michail Georgiou			

Recommended Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Panelling Tools for Rhinoceros	Rajaa Issa	Robert McNeel & Associates	2012	https://wiki.mcneel.com/labs/panelingtools
Pottmann, Hemut et al	Architectural Geometry	Bentley Institute Press	2007	978-1934493045
Mark Garcia	AD: Patterns of Architecture	John Wiley & Sons	2009	0470699590
Philip Ball	Pattern Formation in Nature	Oxford University Press	1999	0198502435