

COURSE OUTLINE

(1) GENERAL

SCHOOL	POLYTECHNIC		
ACADEMIC UNIT	ARCHITECTURE DEPARTMENT		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	ARC 554	SEMESTER	8
COURSE TITLE	SPECIAL TOPICS IN DIGITAL AND PARAMETRIC DESIGN 2		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>	WEEKLY TEACHING HOURS	CREDITS	
Lectures, seminars and laboratory work	2	4	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	Special background, skills development		
PREREQUISITE COURSES:	-		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in English)		
COURSE WEBSITE (URL)	https://eclass.upatras.gr/courses/ARCH562/		

(2) LEARNING OUTCOMES

<p>Learning outcomes</p> <p><i>The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> • <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i> • <i>Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i> • <i>Guidelines for writing Learning Outcomes</i> 						
<p>Skills acquired by students upon successful completion of the course:</p> <ul style="list-style-type: none"> • The deepening in special projects that concern the parametric architectural design. • Learning special processes in the Grasshopper environment with the ability to create parametric designs. • The development of design skills of students in digital 3D design media (Rhino environment). • The connection of design / physical model / prototype through rapid prototyping / laser cutting techniques (Rhino environment, Grasshopper). • Experimenting with design processes that produce abstract synthetic structures in three-dimensional space. 						
<p>General Competences</p> <p><i>Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i></td> <td style="width: 50%; border: none;"><i>Project planning and management</i></td> </tr> <tr> <td style="border: none;"><i>Adapting to new situations</i></td> <td style="border: none;"><i>Respect for difference and multiculturalism</i></td> </tr> <tr> <td style="border: none;"></td> <td style="border: none;"><i>Respect for the natural environment</i></td> </tr> </table>	<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>	<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>		<i>Respect for the natural environment</i>
<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>					
<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>					
	<i>Respect for the natural environment</i>					

<i>Decision-making</i> <i>Working independently</i> <i>Team work</i> <i>Working in an international environment</i> <i>Working in an interdisciplinary environment</i> <i>Production of new research ideas</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i> <i>Criticism and self-criticism</i> <i>Production of free, creative and inductive thinking</i> <i>Others...</i>
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- Search, analysis and synthesis of data and information, using the necessary technologies.
- Autonomous work.
- Teamwork.
- Work in an interdisciplinary environment.
- Production of new research ideas.
- Exercise criticism and self-criticism.
- Promoting free, creative and inductive thinking.

(3) SYLLABUS

The course is an in-depth study of digital parametric design through the Rhinoceros / Grasshopper design platform.

As an in-depth course it is addressed to students who possess the basic knowledge of handling the Rhinoceros / Grasshopper parametric design platform. The aim of the course is to get acquainted with special topics of parametric design that are characterized by complexity of composition and program writing.

The character of the course is mainly technical in order to provide the appropriate cognitive background for further development and utilization. It is composed of a series of presentations of the software, which are combined with short assignments that students are asked to prepare. During the semester, students develop a semester topic as well as compile a list of individual assignments.

Prerequisites for attending the course are the familiarity with the environment of Rhino / Grasshopper and the possibility of abstract - diagrammatic analysis of synthetic problems.

(1) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>		
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>		
TEACHING METHODS <i>The manner and methods of teaching are described in detail.</i> <i>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i> <i>The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the</i>	Activity	Semester workload
	Lectures	8
	Special software tutorials	13
	Introductory works	19
	Project	20
	Course total	50

ECTS	
STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</i> <i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i> <i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i>	<p>The evaluation is done in combination, based on the assignments assigned to the students during the semester, which are delivered remotely through the course website (e-class), and the final project (project) delivered on the day of the exam, during the examination period. The final grade is 40% of the intermediate work and 60% of the final work.</p>

(2) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

- AAD Algorithms-Aided Design: Parametric Strategies using Grasshopper, Arturo Tedeschi, Le penseur publisher, 2014, ISBN-10 : 8895315308
- Architectural Principles in the age of Cybernetics, Christopher Hight, Routledge, 2007
- Parametricism 2.0: Rethinking Architecture's Agenda for the 21st Century, Patrik Schumacher, Academy Press, 2016, ISBN-10 : 1118736168
- The Autopoiesis of Architecture, Volume II: A New Agenda for Architecture, Patrik Schumacher, Wiley, 2012, ISBN-10 : 0470666161
- The Autopoiesis of Architecture, Volume I: A New Framework for Architecture, Patrik Schumacher, Wiley, 2011, ISBN-10 : 0470772980
- Research & Design: The Architecture of Variation, by Lars Spuybroek, Thames & Hudson, 2009, ISBN-10 : 0500342571
- The Function of Form, by Farshid Moussavi, ACTAR, Harvard Graduate School of Design, 2009, ISBN-10 : 8496954730
- Algorithmic architecture, Kostas Terzidis, Amsterdam Architectural Press, 2006
- A thousand plateaus – capitalism and schizophrenia, Gilles Deleuze - Felix Guattari (μτφρ. Brian Massumi), Minneapolis University of Minnesota Press, 1987
- Atlas of novel tectonics, Reiser+Umemoto, Princeton Architectural Press, 2006
- Space Reader: Heterogeneous Space in Architecture (AD Reader), Michael Hensel - Achim Menges - Christopher Hight, Wiley, 2009

- Related academic journals: