

COURSE MODULE OUTLINE

General information

SCHOOL	School of Applied Arts and Sustainable Design		
PROGRAM COURSE	Interaction Generative Design		
LEVEL OF STUDY	Postgraduate		
COURSE UNIT CODE	IGD53	YEAR OF STUDY	2nd
COURSE TITLE	Geometric Concepts in Algorithmic Design 2		
INDEPENDENT TEACHING ACTIVITIES <i>in case credits are awarded for separate components/parts of the course, e.g. in lectures, laboratory exercises, etc. If credits are awarded for the entire course, give the weekly teaching hours and the total credits</i>	WEEKLY TEACHING HOURS		CREDITS
Weekly teaching hours: 21-22 hours per week X 13 weeks	280		10
<i>Add rows if necessary. The organization of teaching and the teaching methods used are described in detail under section 4</i>			
COURSE TYPE Compulsory, Optional, Optional mandatory	Compulsory		
PREREQUISITE COURSES:	IGD51		
LANGUAGE OF INSTRUCTION AND EXAMS:	English		
THE COURSE IS OFFERED TO ERASMUS STUDENTS	NO		
COURSE WEBSITE (URL)	https://www.eap.gr/en/diadrastikos-algorithmikos-sxediasmos/diadrastikos-algorithmikos-sxediasmos-thematikes-enotites/#igd53 Each unit has its own page in the EAP digital education space (http://courses.eap.gr), with controlled access (use of code) for students and teachers.		

(2) LEARNING OUTCOMES

Learning Outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail. It is necessary to consult:

APPENDIX A

- Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework.
- Descriptive indicators for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and

APPENDIX B

- Guidelines for writing Learning Outcomes

Students will be able to:

- Know elements of the theory of flat decorations and the theory of polyhedrons.
- Manage patterns on curved surfaces.
- Transform grids onto curved surfaces.
- Design polyhedral structures.
- Understand holographic methods of releasing the form of the designed object from its mater.

General Competences

Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?

Search for, analysis and synthesis of data and information by the use of appropriate technologies,	Project planning and management
Adapting to new situations	Respect for diversity and multiculturalism
Decision-making	Environmental awareness
Individual/Independent work	Social, professional and ethical responsibility and sensitivity to gender issues
Group/Team work	Critical thinking
Working in an international environment	Development of free, creative and inductive thinking
Working in an interdisciplinary environment (Other.....citizenship, spiritual freedom, social
Introduction of innovative research	awareness, altruism etc.)

Search for, analysis and synthesis of data and information by the use of appropriate technologies
 Decision-making
 Individual/Independent work
 Working in an interdisciplinary environment
 Development of free, creative and inductive thinking
 Individual/Independent work

(3) COURSE CONTENT

The unit is thematically linked to the module IGD51 and aims at deepening further geometric concepts found in algorithmic design. The aim is to familiarize students with the management of grids and patterns on the plane and in 3d space, through the tool of algorithmic design. The aim is also to familiarize students with structures that fill the plane (paving), but also the space (space filling). Finally, the aim of the unit is the knowledge of elements of holography, to further intensify of students' perception of space, and on the other hand for the familiarization with the idea of releasing the form of the designed object from its mater.

- Geometric concepts in algorithmic design 2
- Projections and transformations of grids and patterns – Isoparametric curves
- Elements of theory of groups of flat decorations – Techniques for creating surface separations into regular and irregular tiles
- Create identical curved tiles
- Elements of polyhedron theory – Space filling techniques
- Elements of Digital Holography

(4) TEACHING METHODS--ASSESSMENT

MODES OF DELIVERY <i>Face-to-face, in-class lecturing, distance teaching and distance learning etc.</i>	Distance teaching and distance learning	
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY <i>Use of ICT in teaching, Laboratory Education, Communication with students</i>	<ul style="list-style-type: none"> • Using programs to present complex geometric shapes. • Multimedia material (Videos, Slides, Exercises). • PowerPoint presentations with a wide variety of dynamic interactive files. • Presentations through a parametric design program, for the direct supervision of the change of the shape of the designed object, depending on the decisions to handle the object to be displayed. 	
COURSE DESIGN <i>Description of teaching techniques, practices and methods: Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity, etc.</i> <i>The study hours for each learning activity as well as the hours of selfdirected study are given following the principles of the ECTS.</i>	Activity/Method	Semester workload
	3 OSS (* 4 hours)	12
	Self-assessment exercises	35
	Module activities	20
	Preparation of Assignments (3 assignments * 10 hours)	30
	Examination	3
	Individual study	180
	Total module workload (hours)	280

<p style="text-align: center;">STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS</p> <p><i>Detailed description of the evaluation procedures:</i></p> <p><i>Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice tests, short- answer questions, open-ended questions, problem solving, written work, essay/report, oral exam, presentation, laboratory work, other.....etc.</i></p> <p><i>Specifically defined evaluation criteria are stated, as well as if and where they are accessible by the students.</i></p>	<p>Elaboration of three (3) written assignments during the semester. To participate in the final exam, it is mandatory to submit at least two of the three assignments and the total grade in the assignments must be at least 20 out of 100.</p> <p>Final written exam.</p> <p>These criteria are derived from the EAP Study Regulations (https://www.eap.gr/wp-content/uploads/2022/03/kanonismos-spoudwn-isxys-apo-to-didaktiko-etos-2022-2023.pdf) and are posted, both on the website of the Foundation (https://www.eap.gr/education/odigos-spoudwn-eap/), and on the Digital Education Page (courses) of the unit.</p>

(5) SUGGESTED BIBLIOGRAPHY:

<p><i>- Suggested bibliography</i></p> <ol style="list-style-type: none"> 1. Kourniatis, Nikolaos. <i>Geometric Principles in Generative Design</i>. Thessaloniki: Tziolas, 2021. (όλες οι σελίδες που δεν είναι στη Γεωμετρία του 1^{ου} εξαμήνου) 2. Melendez, Frank. <i>Drawing from the Model: Fundamentals of Digital Drawing, 3D Modeling, and Visual Programming in Architectural Design</i>, John Wiley & Sons, Incorporated, 2019. 3. Ball, Philip. <i>Shapes: Nature's Patterns: a Tapestry in Three Parts</i>, Oxford University Press, 2011. 4. Harris, James. <i>Fractal Architecture: Organic Design Philosophy in Theory and Practice</i>, University of New Mexico Press, 2012. <p><i>- Related scientific Journals:</i></p>
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