

MODULE OUTLINE

1. GENERAL INFORMATION

SCHOOL	SCHOOL OF APPLIED ARTS AND SUSTAINABLE DESIGN		
PROGRAM COURSE	Interaction Generative Design		
LEVEL OF STUDY	POSTGRADUATE		
MODULE CODE	IGD52	YEAR OF STUDY	1 st
MODULE TITLE	Introduction to Algorithmic design		
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>		HOURS	CREDIS
Weekly teaching hours: 21-22 hours per week X 13 weeks		280	10 ECTS
COURSE TYPE Compulsory, Optional, Optional mandatory	Compulsory		
PREREQUISITE MODULES:	There are no prerequisites for this CM		
LANGUAGE OF INSTRUCTION AND EXAMS	ENGLISH		
THE MODULE IS OFFERED TO ERASMUS STUDENTS	No		
MODULE WEBSITE (URL)	https://www.eap.gr/education/postgraduate/biannual/diastikos-algorithmikos-sxediasmos/ 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

<p>Learning Outcomes</p> <ul style="list-style-type: none"> 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:
<p><i>Introduction to Algorithmic design</i></p> <p>On successful completion of the study of this volume, students will be able to:</p> <ul style="list-style-type: none"> Understand computational mechanisms for creative processes of generating space and objects according to algorithmic rationales.

- Describe the form and the design parameters of spaces or objects in algorithmic terms and parametric models.
- Manage data structures in algorithmic design.
- Develop criteria and apply methods of form-finding of the designed object or space.
- Apply form optimization methods and environmental criteria in algorithmic design processes.

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,

Adapting to new situations

Decision-making

Individual/Independent work

Group/Team work

Working in an international environment

Working in an interdisciplinary environment (Other.....citizenship, spiritual freedom, social

Introduction of innovative research

Project planning and management

Respect for diversity and multiculturalism

Environmental awareness

Social, professional and ethical responsibility and sensitivity to gender issues

Critical thinking

Development of free, creative and inductive thinking

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awareness, altruism etc.)

Search for, analysis and synthesis of data and information by the use of appropriate technologies,

Adapting to new situations

Decision-making

Individual/Independent work

Project planning and management

Critical thinking

Development of free, creative and inductive thinking

3. MODULE CONTENT

The aim of this course module is to introduce students to algorithmic thinking and the use of parametric tools for the design of spaces and objects. Students study the processes of algorithmic description of the form, and understand the capabilities of computational mechanisms for form-finding and optimization, with environmental terms. Algorithmic knowledge acquired in this module is applied in algorithmic thinking exercises and visual code scripting.

Topics:

Algorithmic design basics

Parametric modelling and analysis tools (curves, surfaces, planes, vectors etc)
Data management
Interactive simulation and Form-finding
Optimization
Environmental analysis

4. TEACHING METHODS--ASSESSMENT

<p>MODES OF DELIVERY <i>Face-to-face, in-class lecturing, distance teaching and distance learning etc.</i></p>	<p>Distance education with three Group Counseling Meetings (OSS) during the academic year on weekends.</p>																
<p>USE OF INFORMATION AND COMMUNICATION TECHNOLOGY <i>Use of ICT in teaching, Laboratory Education, Communication with students</i></p>	<p>We use : Remote meetings tools (cisco webex), Presentation software (e.g. power point), Specialized software in the subjects under study (Rhinoceros 3D, Grasshoper, etc.).</p> <p>Additionally, the students use office automation tools, web browsers and e-reader for digital books.</p>																
<p>MODULE 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></p> <p><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></p>	<table border="1"> <thead> <tr> <th>Activity</th> <th>Annual Workload</th> </tr> </thead> <tbody> <tr> <td>3 OSS (* 4 hours)</td> <td>12</td> </tr> <tr> <td>Self-assessment exercises</td> <td>34</td> </tr> <tr> <td>Module activities</td> <td>17</td> </tr> <tr> <td>Preparation of Assignments (3 assignments * 10 hours)</td> <td>30</td> </tr> <tr> <td>Examination</td> <td>3</td> </tr> <tr> <td>Individual study</td> <td>184</td> </tr> <tr> <td>Total module workload (hours)</td> <td>280</td> </tr> </tbody> </table>	Activity	Annual Workload	3 OSS (* 4 hours)	12	Self-assessment exercises	34	Module activities	17	Preparation of Assignments (3 assignments * 10 hours)	30	Examination	3	Individual study	184	Total module workload (hours)	280
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<p>STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS</p>	<p>a1. Two (2) short written assignments (SA) each with a 10% weight in the final grade of the CM.</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>
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(6) SUGGESTED BIBLIOGRAPHY

- Suggested bibliography:

1. Peters, Terri, and Brady Peters. Inside Smartgeometry: Expanding the Architectural Possibilities of Computational Design, John Wiley & Sons, Incorporated, 2013. (e-book)
2. Melendez, Frank. Drawing from the Model: Fundamentals of Digital Drawing, 3D Modeling, and Visual Programming in Architectural Design, John Wiley & Sons, Incorporated, 2019. (e-book)
3. Reas, Casey. Form + Code in Design Art and Architecture. New York: Princeton Architectural Press, 2010. (e-book)
4. Coates, Paul. Programming.Architecture. Oxon UK / New York: Routledge, 2010. (e-book)
5. Peters, Brady, De Kestelier, Xavier (eds.). Computation works: The building of algorithmic thought. Architectural Design 83, 2 (2013). (e-book)