

## COURSE OUTLINE

### 1. GENERAL

<b>SCHOOL</b>	ENGINEERING SCHOOL		
<b>DEPARTMENT</b>	ARCHITECTURE		
<b>LEVEL OF COURSE</b>	UNDERGRADUATE		
<b>COURSE CODE</b>	ARC_222	<b>SEMESTER OF STUDIES</b>	2 <sup>o</sup>
<b>COURSE TITLE</b>	DESCRIPTIVE AND PROJECTIVE GEOMETRY 2		
<b>INDEPENDENT TEACHING ACTIVITIES</b>	<b>TEACHING HOURS PER WEEK</b>	<b>ECTS CREDITS</b>	
Lectures	2	2	
<b>COURSE TYPE</b>	Field of Science		
<b>PREREQUISITE COURSES:</b>	<p>The course is a continuation of the corresponding course of the first semester "Descriptive and Projective Geometry 1".</p> <p>There are no other prerequisite courses.</p> <p>However, as in the previous semester, it is extremely useful for students to have knowledge of 3D Euclidean Geometry.</p>		
<b>TEACHING AND ASSESSMENT LANGUAGE:</b>	Greek.		
<b>THE COURSE IS OFFERED TO ERASMUS STUDENTS</b>	No		
<b>COURSE WEBPAGE (URL)</b>	<a href="https://eclass.upatras.gr/courses/ARC_222/">https://eclass.upatras.gr/courses/ARC_222/</a>		

### 2. LEARNING OUTCOMES

<b>Learning outcomes</b>
<p>At the end of the course the students are expected to be in position to design representations and images of 3D objects by applying scientifically based methods of representation that are nowadays used by engineers and not by applying simple practical methods.</p> <p>In this way the students will be able:</p> <ol style="list-style-type: none"> <li>1. To cover adequately the needs of representation of any object on their field of interest.</li> <li>2. To realize the methods of creation of any image that appear on a computer screen when CAD programs are used.</li> <li>3. To understand the geometrical relations in space of the object as well as</li> <li>4. The geometrical relations between 3D and 2D representation of the objects.</li> <li>5. In addition the students with the principals of the Synthetic Projective Geometry should have acquired, above the basic knowledge, the understanding of Representation Methods, as a whole with a common starting point.</li> </ol>
<b>General Abilities</b>

By the end of the course the student would be able to analyze and compose given information.  
 To enrich his or her inductive reasoning.  
 To adjust in new situations.  
 To work autonomously and in groups.  
 To produce new ideas.  
 Practicing criticism and self-criticism.

### 3. COURSE CONTENT

#### SUMMARY DESCRIPTION

A. Study of second degree surfaces, eg cone, cylinder, sphere, ellipsoid, hyperbolic paraboloid, etc., as well as other surfaces such as torus, etc.. Also, in the current semester, the Platonic and Archimedean solids are studied in particular.

B. Applications of the methods of the 1<sup>st</sup> semester, are continued.

1. Surfaces are represented using the four Methods of Representation.

2. Representation of geometrical objects with the Methods of Representation.

3. Transformation of the representation of an object to another means of representation.

4. Intersections of surfaces.

5. Developments.

C. Shades and Shadows of surfaces.

D. Applications of Methods of Representation on real problems that occur on practicing the profession of Architects.

E. The elements of Synthetic Projective Geometry of the 1<sup>st</sup> semester are continued and basic geometric properties are applied in the Descriptive Geometry. Architectural themes that include all these principles are analyzed.

### 4. TEACHING AND LEARNING METHODS - ASSESSMENT

<b>For the final</b>	In the classroom. The course is conducted with a combination of lectures and design topics. The students are required to submit every week design exercises. The presence of students in the lectures is mandatory.	
<b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES</b>	1. e-class and <a href="http://www.opencourses.gr/opencourse.xhtml?id=15551&amp;ln=el">http://www.opencourses.gr/opencourse.xhtml?id=15551&amp;ln=el</a> 2. Also, during lectures 3d animated video are presented.	
<b>TEACHING ORGANIZATION</b>	<b>Activity</b>	<b>Semester Work load</b>
	Lectures	26
	Homework	24
	Total number of hours for the Course	50
<b>STUDENT ASSESSEMNT</b>	1. Through quick and simple exercises given during the lecture. 2. Small weekly projects 3. Project of the semester 4. Final exam	

## 5. RECOMMENDED LITERATURE

In Greek

1. «Methods of Representation», George E. Lefkaditis – George M. Exarchacos
2. «Platonic and Archimedean solids» George E. Lefkaditis – Evlampia K. Dimitriadou
3. «Descriptive Geometry», Markatis Stylianos
4. «Descriptive Geometry», Georgiou Dimitris