

## COURSE OUTLINE

### 1. GENERAL

<b>SCHOOL</b>	ENGINEERING		
<b>DEPARTMENT</b>	PRODUCT AND SYSTEMS DESIGN ENGINEERING		
<b>LEVEL OF STUDIES</b>	Undergraduate		
<b>COURSE CODE</b>	2203	<b>SEMESTER</b>	4
<b>COURSE TITLE</b>	STUDIO-4 , CONCEPT DESIGN		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <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>		<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>
Lectures		<b>2+2</b>	<b>6</b>
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
<b>COURSE TYPE</b> <i>general background, special background, specialised general knowledge, skills development</i>	Special background, skills development		
<b>PREREQUISITE COURSES:</b>	NONE		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	GREEK/ENGLISH		
<b>COURSE DELIVERED TO ERASMUS STUDENTS</b>	YES		
<b>MODULE WEB PAGE (URL)</b>	<a href="https://eclass.uowm.gr/">https://eclass.uowm.gr/</a>		

### 2. LEARNING OUTCOMES

<b>Learning outcomes</b>
<p>Students are introduced to the understanding of more complex issues relating to design problem-solving based on the understanding and experience they have gained in earlier design problems in their early years of study, while they are based on state-of-the-art scientific manuals. Also, teaching in design studio 4 involves educational perspectives that arise from modern developments in the methodological problem-solving of products, systems and service design. At the stage of the conceptual design.</p>
<p>Students are able to use the design way of thinking, the knowledge and the understanding they have acquired in a way that corresponds to their professional working space. At the same time, they self-develop critical and design skills that are typically demonstrated by developing and supporting design argumentations in the context of solving design problems.</p>
<p>Approaching design problems through a methodological perspective, students acquire a further ability to compile and interpret elements within the human-centered design paradigm to develop and then shape a possible range of design choices to address each of the design problems they interact with.</p>
<p>Students are able to organize information, present multiple ideas, solutions to design problems for both qualified and non-specialized audiences.</p>
<p>The design studio 4 course aims to develop design skills and also to acquire the knowledge that students need in order to cope with design problems of greater complexity in the course of their studies, aiding them to largely develop their design autonomy in multiple design fields.</p>

### General Skills

Upon successful completion of the program students will:

**Knowledge:** Students gain advanced knowledge in the methodological problem-solving for design and gain a critical understanding of the relevant theoretical paradigms and principles that govern a modern design practice.

**Skills:** Students acquire advanced skills while gradually acquiring the ability to organize information, to present multiple ideas as solutions to complex and open-ended and ill-defined design problems.

**Capabilities:** Students, develop further their abilities for a collaborative design, while they are developing advanced skills that enable them to manage complex techniques and projects, where sharing is required to take responsibility for decision-making in uncertain design situations.

### 3. COURSE CONTENTS

The course "Studio 4 - Concept Design" is related to the implementation of a design project based on the ideas-solutions that were produced and evaluated based on the courses of the previous semesters "Design Theory and Methodology" and "Studio 3 - Idea". More specifically, the course is developed in three different areas of the design process, a) Development of product sketches, b) 3D modeling of products and photorealism and c) prototyping and manufacturing of products. The aim of the course is to integrate sections from the design theory and tools for the development and management of ideas into the functional use of traditional and new tools in order to create design products with an emphasis on functionality, usability and quality of the final object.

The course "Studio 4 - Concept Design" is divided into three main sections that aimed at completing holistic design projects. The first section deals with the theory and practice of digital product sketch. Emphasis is given on the methodologies of creative sketch development in order to visualize ideas as two-dimensional designs in order to indicate possible forms, functions or applications for innovative products. The final function of sketches or forms is the further detection of solutions and assumptions concerning forms and functions of the final products. At the same time, a special mention is made to the use and importance of color in product design through applications and exercises examples. The second section aims at a brief presentation of the three-dimensional modeling of products and their photorealism.

This report summarizes the following elements: a) the process of using computers and special software to create virtual 3D or 2D models, b) the variety of CAD software that meet all the requirements and applications of the industry and c) emphasizes the role of three-dimensional modeling in the stage of creation and elaboration of the design idea (concept). The third section deals with the techniques of product prototyping and construction. Prototyping is a design method that uses physical or technical prototypes to study and test how a new product will be used, as well as how it looks like before the production. In general, the main features of prototyping (material replacement, iterations, prototype fidelity, audience and user interface) and the main uses of prototyping (idea generation, testing by users, communication, design validation) are mentioned. Finally, through specific examples and exercises, prototyping techniques are presented: clay / paper modeling, maquette development, product gamification, wood and other natural materials constructions. Sub-objectives of the course are: Methodological design with emphasis on the implementation of design objectives, Introduction to design through understanding the needs and requirements of users, Introduction to conceptual design with emphasis on functionality, usability, aesthetic quality) and technical precision, capturing design ideas in three dimensions with traditional and new tools. Evaluation of ideas.

#### 4. TEACHING METHODS - ASSESSMENT

<b>MODE OF DELIVERY</b>	In class, face to face	
<b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b>	<ul style="list-style-type: none"><li>• Video and slide presentations via projector</li><li>• Support of teaching process via the electronic platform e-class</li><li>• Communication with students.</li></ul>	
<b>TEACHING METHODS</b>	<b>Activity</b>	<b>Semester workload</b>
	Lectures	50
	Non-directed study	50
	Lab exercises	50
	Course total	<b>150</b>
<b>ASSESSMENT METHODS</b>	Lab exercise which includes: I. Homework exercises II. Exercises in the class III. Coursework for portfolio built  Final written exam which includes: i. Short-answer questions ii. Multiple choice questions iii. Problem solving	

#### 5. ATTACHED

##### - Suggested Bibliography

##### (Eudoxus repository):

- Βιβλίο [94689164]: Σχεδίαση και Πρωτοτυποποίηση Προϊόντων, Ευκολίδης Νικόλαος, Μανάβης Αθανάσιος, Κυράτσης Παναγιώτης.
- Βιβλίο [32997789]: ΑΡΧΙΤΕΚΤΟΝΙΚΗ ΣΥΝΘΕΣΗ: ΔΕΔΟΜΕΝΑ ΣΧΕΔΙΑΣΜΟΥ ΟΙΚΟΔΟΜΙΚΩΝ ΕΡΓΩΝ, DAVID LITTLEFIELD (επιμέλεια).