COURSE OUTLINE

1. GENERAL

SCHOOL	ENGINEERING
DEPARTMENT	PRODUCT AND SYSTEMS DESIGN ENGINEERING
LEVEL OF STUDIES	UNDERGRADUATE
COURSE CODE	2204 **SEMESTER** 4º
COURSE TITLE	**COMPUTER AIDED DESIGN**

INDEPENDENT TEACHING ACTIVITIES *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*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	**3**	**6**
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Special Background
PREREQUISITE COURSES:	NONE
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK/ENGLISH
COURSE DELIVERED TO ERASMUS STUDENTS	YES
MODULE WEB PAGE (URL)	https://eclass.uowm.gr/

2. LEARNING OUTCOMES

Learning outcomes
The purpose of this course is to introduce the students to the processes and methods for the computer aided design of products in three dimensions. The students are introduced to the three-dimensional design with the aid of computers. They acquire knowledge on the following concepts: design methodologies, geometric models, internal representation of solid geometric models, parametric design, assembly methodologies, representation of curves and surfaces, and rendering techniques.   **On successful completion of this module the learner will be able to:**   1. Know the terminology of a CAD system.   2. Understand the structure of a CAD system.   3. Use the geometric models for designing three-dimensional products.   4. Select the appropriate geometric model for the designing of a three-dimensional product.   5. Use a CAD software.   6. Apply different methodologies for designing three-dimensional objects
General Skills
Upon successful completion of the program students will: • have the theoretical and practical background on the field of Industrial Design and the corresponding profession.   • apply a wide range of scientific and technical knowledge concerning the design and development of industrial products.

3. COURSE CONTENTS

- *The product cycle*. The design process, the benefits of using CAD/CAM systems in manufacturing of a product.
- *Introduction to CAD Systems*. CAD Hardware, CAD software, evaluation of CAD systems.
- *Curves*. Representation of curves, parametric representation of analytic and synthetic curves.
- *Surfaces*. Representation of surfaces, parametric representation of analytic and synthetic surfaces.
- *Geometric modeling*. Geometric models for three-dimensional design (wireframe, surface and solid).
- *The solid geometric model*. Methods for creating a solid (primitive solids, Boolean operations, sweeping, feature-based design, parametric modeling).
- *Methods for the internal representation of solids*. Constructive Solid Geometry (CSG), Boundary Representation (b-rep) models and Decomposition Model.
- *Solid modeling systems*. Architecture of solid modeling systems.

4. TEACHING METHODS - ASSESSMENT

MODE OFDELIVERY	In class, face to face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	• Use of appropriate CAD software • Video and slide presentations via projector • Support of teaching process via the electronic platform e-class	
TEACHING METHODS	*Activity*	*Semester workload*
	Lectures	70
	Semester project	40
	Non-directed study	40
	Course total	**150**

ASSESSMENT METHODS	Final written exam which includes:
	  i. Short-answer questions
	  ii. Multiple choice questions
	  iii. Problem solving	

5. ATTACHED

- Suggested bibliography:
- CAD/CAM Theory and Practice, Ibrahim Zeid, McGraw Hill, 1991.
- Mastering CAD/CAM, Ibrahim,Zeid, McGraw-Hill Education – Europe, 2004.
- Συστήματα CAD/CAM και Τρισδιάστατη Μοντελοποίηση, Νικόλαος Μπιλάλης, Εμμανουήλ Μαραβελάκης, Εκδόσεις Κριτική, Αθήνα, 2020.
- Βασικές αρχές συστημάτων CAD/CAM/CAE, Kunwoo Lee, Κλειδάριθμος, 2009.
- Σχεδιασμός με Η-Υ, Παπαδόπουλος Χρήστος, Εκδόσεις Πανεπιστημίου Πατρών, 2000.