COURSE OUTLINE

1. GENERAL

SCHOOL	ENGINEERING
DEPARTMENT	PRODUCT AND SYSTEMS DESIGN ENGINEERING
LEVEL OF STUDIES	GRADUATE
COURSE CODE	**MSCCAD21** **SEMESTER** 2nd
COURSE TITLE	**ADVANCED 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:	**COMPUTER AIDED DESIGN**		
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 graduate students to advanced processes and methods for the computer aided design of products in three dimensions. The students are introduced to the state of the art tools in CAD systems that aid the process of creating new products. They acquire knowledge on modern techniques and processes used in modern CAD systems. Also they are introduced to product data management systems. The laboratory includes exercises for designing three-dimensional products with solid and surface models, using appropriate CAD software. **On successful completion of this module the learner will be able to:** 1. Have a deep understanding the structure of a system CAD. 2. Apply advanced methods for drawing three-dimensional objects. 3. Design complex three-dimensional objects. 4. Apply assembly techniques. 5. Create detailed construction drawings of 3-D objects. 6. Create detailed materials lists of assemblies. 7. Know the two-dimensional and three-dimensional transformations. 8. Know the mathematical description of curves and surfaces. 9. Apply appropriate methods for the design of complex surfaces.
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

- Representation of curves and surfaces with Ferguson, Bezier, B-Splines, Nurbs.
- Assembly methodologies.
- Assembly analysis.
- Support systems for the design process.
- Product Data Management Systems (PDM).
- Management of the Product Life Cycle.
- Data exchange between CAD systems.
- *Laboratory.* Exercises for designing complex three-dimensional products with solid and surface models, using appropriate CAD software

4. TEACHING METHODS - ASSESSMENT

MODE OFDELIVERY	1. THEORY In class, face to face 2. LABORATORY In laboratory facilities, 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	40
	Semester project	20
	Laboratory exercises	40
	Non-directed study	50
	Course total	**150**

ASSESSMENT METHODS	1. THEORY:
	Final written exam which includes:
	   i. Short-answer questions
	   ii. Multiple choice questions
	   iii. Problem solving
	2. LABORATORY:
	Final exam which includes:
	   i. Laboratory exercise (drawing of a product in 3 dimensions using CAD software).

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, 2009.
- Βασικές αρχές συστημάτων CAD/CAM/CAE, Kunwoo Lee, Κλειδάριθμος, 2009.
- Σχεδιασμός με Η-Υ, Παπαδόπουλος Χρήστος, Εκδόσεις Πανεπιστημίου Πατρών, 2000.
- Related academic journals: