8.21 CE0861 – Special Topics in CAD

(1) GENERAL

SCHOOL	ENGINEERING SCHOOL		
ACADEMIC UNIT	CIVIL ENGINEERING DEPARTMENT		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**CE-861**	**SEMESTER**	**8**
COURSE TITLE	**Special Topics in CAD**		

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**
Theory	1	1
Laboratory	2	3
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).	**3**	**4**

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Special Background Course
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/CIV360/

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is to sharpen the students' knowledge of CAD and BIM software. In this field the spatial perception of the student is sharpened. Existing design skills are used to understand the structure and operation of design/drawing programs. Once their categorization and classification is completed, in this section the students sharpen their 3d design/modeling skills.

Upon completion of the course, students will have:

1. Basic knowledge of analyzing and synthesizing 3d models by applying geometrical and stereometrical knowledge.
2. In-depth knowledge and critical understanding of advanced 3d models and create them using stereometrical objects.
3. Knowledge and understanding of BIM software.

Specifically, students will be able to:

1. Have adequate comprehension skills of 3d modeling, rendering and 3d animation
2. They evaluate their needs choosing the appropriate software in each case.
3. Manage time in an appropriate manner.

Finally, the students develop and evolve analytic and synthetic skills which are useful to any scientist.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?;.

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*

The course improves the following general skills:

- Search, analysis and synthesis of data and information, using the necessary technologies and software.
- official - creative and inductive thinking.

(3) SYLLABUS

It is emphasized that the theoretical part of the course requires a computer so the student's interact with the concepts-procedures that the teacher describes.

Curriculum:

Observer - model - Axis system management

Creating two-dimensional entities in the three-dimensional space, processing, synthesizing and removing them. Automations to create these "entities".

Appearances-hide lines-entities.

Creation of three-dimensional entities interwoven with management and supervision of each axis system. Development of synthetic and inductive thinking.

Application of Boolean variables (union-subtract-intersect-interference etc) to entities, processing and understanding results.

Analysis of three-dimensional objects into the individual elements of which they consist, process justification, synthesis and development of creativity.

Integration of models on paper under different views (floor plans - views - axonometrically) and under different scales.

Principles of rendering, explanation of material concept in design-photorealistic software, explanation of lighting concepts (parallel light beams - point source and projector) in software. Creating material, applying it to 3D design entities and producing photorealistic illustrations.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	The method that has been chosen during the teaching is the dialectical structuralism with elements of obstetrics where the student with the -gradually decreasing- teacher assistance reaches knowledge. This teaching method gives, among other things, confidence to the learner through the successful application of the concepts and

	leads him to further search for information in order to constantly evolve. Teaching from a blackboard in the room (Face to face) with a parallel application on a computer and immediate possibility of self-evaluation.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Course "nature" requires specialized software and its use. Multimedia material (Videos, Slides, Exercises) available On-Line from the Open Academic Courses platform. Additional communication via e-mail, exclusive website of the course, support of the learning process by providing selected additional exercises and indicatively solved examples through the website.
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS*	
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	• Exercises (60%) • Final Examination in the laboratory (40%) The evaluation criteria have been presented to the students before the examination, the individual grade of the subjects is written in them and the final grade is accessible through the online platform of the Institution. In addition, students can view their file and individual grade on the topics, be given clarifications about them and, finally, point out any mistakes they make. The language of assessment is Greek unless the students come from the Erasmus program, in which case the examination is in English.

Activity	***Semester workload***
Lectures	20
Classwork	40
Preparation for Project	40
Personal Study	80
Projects	20
Course total	**200**

(5) ATTACHED BIBLIOGRAPHY

Greek Bibliography:

1. Kordonias Basileios, 3d models Athens, kleidarithmos
2. McFarland, Jon. AutoCAD 2009 και AutoCAD LT 2009 : step by step / Jon McFarland · translated by Agamemnon Milios. - Athens: Gioyrdas M., 2009
3. Onstott, Scott. AutoCAD 2012 : Optical guide / Scott Onstott · translated by Agamemnon Milios. - Athens: Gioyrdas M., 2011
4. Drawing with AutoCAD 2017 / John Kapos. - Athens : Klidarithmos, 2017

Foreign Bibliography:

1. George Omura, Mastering AutoCAD 2012 and AutoCAD LT 2012, George Omura, John Wiley & Sons, 2011
2. Munir Hamad, AutoCAD 2018 Beginning and intermediate, Mercury Learning & Information, 2017
3. Scott Onstott, AutoCAD 2014 Essentials: Autodesk Official Press, John Wiley & Sons, 2013