COURSE OUTLINE

ADVANCED CAD-CAM SYSTEMS

(1) GENERAL

SCHOOL	TECHNOLOGY		
DEPARTMENT	FORESTRY, WOOD SCIENCES & DEISGN		
LEVEL	POSTGRADUATE		
COURSE CODE	**M121**	**SEMESTER**	**2nd**
COURSE TITLE	ADVANCED CAD-CAM SYSTEMS		

ACTIVITIES	**WEEKLY HOURS**	**ECTS**
Lectures	2	6
TOTAL	2	6

TYPE OF COURSE	COMPULSORY EXPERTISE IN PRODUCT DESIGN & EXPERT SELECTION IN TECHNOLOGY AND MANUFACTURING & INMANAGEMENT AND MARKETING
PREREQUISITES:	NO
LANGUAGE OF TEACHING AND EXAMINATION:	GREEK
COURSE OFFERED TO STUDENTS ERASMUS:	NO
WEBPAGES COURSE (URL)	https://eclass.uth.gr/courses/FWSD_P_120/

(2) LEARNING OUTCOMES

Learning Outcomes
The objective purpose of the course is the utilization of CAD/CAM systems during the design and production process of industrial products through the use of a modern integrated CAD/CAM system from the design of a product to the programming of digitally controlled CNC machine tools. Upon successful completion of the course, the student will be able to: • The use of CAD/CAM systems in an industrial environment • Knowledge of designing in a CAD/CAM system • Parametric design in a CAD environment • The acquisition of skills to recognize the appropriate processes for the production of objects according to their morphology. • The recognition and utilization of the G code • The acquisition of knowledge of operation and capabilities of CNC equipment
General Skills

(3) COURSE CONTENT

In the theoretical part of the course the student is taught and learns about:

- Introduction to CAD/CAM systems.
- Use 2d sketches, create sketches with geometric constraints for use in designing 3d geometries.
- Parametric design of morphological features. Familiarity with the principles of design intent.
- 3d model design in CAD software, mainly prism-based geometries and mechanical components.
- 3d model design in CAD software, mainly axisymmetric geometries.

- 3d model design in CAD software using commands that create advanced geometries in 3d space.
- Create assemblies in CAD software.
- Design of product assemblies.
- Advanced modeling -Surface Modeling.
- Creation of mechanisms.
- Converting the CAD/CAM data into machine language and feeding the CNC equipment.
- Machining simulation in CAM software. Manufacturing object on CNC equipment.

In the 1st lesson, the first assignment is given that the students should implement, the duration of the assignment is 7 days, a similar procedure is followed for the following assignments.
The relevant directions are given, while material and instructions are posted on the e-class https://e-class.teilar.gr/courses/MSTX106/
Students are graded for the total performance in the assignments they undertake with a total grade of 40% of the final grade.

(4) TEACHING AND LEARNING METHODS - EVALUATION

COURSE DELIVERY METHOD	In class and remotely
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	• Use of PC, ppt slides, projector. • Use of PC to learn the CAD/CAM design program, export the machine code as well as use of CNC rapid prototyping to perform the required machining. • Learning process support through the e-class electronic platform
MANAGEMENT OF TEACHING	

Activity	***Semester Workload***
Lectures	26
Small individual practice tasks	20
Final Assignment	60
Independent Study	44
Course Total (25 workload hours per credit unit)	***150***

STUDENT EVALUATION	I. Written final exam (60%) which includes: - Drafting in CAD/CAM software - Examination on laboratory equipment II. Presentation of Individual Assignments (40%).

(5) RECOMMENDED-BIBLIOGRAPHY

- Suggested Bibliography:

- Rob Thompson, Manufacturing Processes for Design Professionals, Thames & Hudson

- Νικόλαος Μπιλάλης, Εμμανουήλ Μαραβλάκης, Συστήματα CAD/CAM και τρισδιάστατη μοντελοποίηση, Κρητική
- Lee, Kunwoo, Βασικές αρχές συστημάτων CAD/ CAM/ CAE, Κλειδάριθμος
- Schmid D., Kari B., Kraus E., Robens G., Nowak H., Strobel P. 1997 CIM Lehrbuch zyr Automatisierung der Fertigung, Ευρωπαϊκές τεχνολογικές εκδόσεις – Γ. & Σ. Παρικού & ΣΙΑ Ο. Ε., Αθήνα 1997
- Μηχανές αριθμητικού ελέγχου. Steve Krar, Arthur Gill. Εκδόσεις Τζιόλα
- Φιλήμονος, Χρ. Σκιττίδη, 2000. Βασικές αρχές αριθμητικού ελέγχου και προγραμματισμός εργαλειομηχανών CNC. Σύγχρονη εκδοτική, Αθήνα 2000

- Related scientific journals:

- Design Issues
- Computer Aided Geometric Design
- CAD Computer-Aided Design
- International Journal of CAD/CAM
- International journal of rapid manufacturing
- RTejournal (Rapid Technology Electronic Journal)
- Virtual and Physical Prototypin