COURSE OUTCOME

KM551 – CAD-CAM-CAE

1. GENERAL

SCHOOL	Technology		
DEPARTMENT	Forestry, Wood Science & Design		
LEVEL	*Undergraduate*		
CODE	KM551	**STUDENT SEMESTER**	5TH
COURSE TITLE	CAD-CAM-CAE		

ACTIVITIES	**WEEKLY HRS**	**ECTS**
Lectures and Workshops	2+1	5

TYPE OF COURSE	Scientific Area
PREREQUISITES:	None
LANGUAGE TEACHING AND EXAMINATION:	Greek
THE COURSE OFFERED TO STUDENTS ERASMUS	No
WEBPAGES COURSE (URL)	

2. LEARNING OUTCOMES

Learning Outcomes

The course aims to present the fundamental principles on which the CAD-CAM-CAE systems are based. Upon successful completion of the course, the student will be able to:

- Recognize the components of CAD / CAM / CAE systems
- Understand how systems produce designs using the computer
- To know the modelling systems and their applications
- Understand the usefulness of the finite element method in modelling
- Optimize a system using search methods
- Select the appropriate component programming language
- To know the applications of rapid prototype manufacturing in modern industry
- • Use intercommunication communication standards between CAD/CAM/CAE systems

General Abilities

- Search, analysis and synthesis of data and information using modern technologies
- Ability to apply a wide range of scientific and technical knowledge related to the product design cycle

3. COURSE CONTENT

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

- Introduction to CAD / CAM / CAE systems. The use of CAD / CAM / CAE systems in product development.
- The evolution of CAD / CAM / CAE Systems.
- The components of CAD / CAM / CAE systems.

- Basic graphic programming concepts.
- Communication between CAD / CAM / CAE systems.
- Current trends and evolution.
- Geometric modelling systems.
- Model analysis with finite elements.
- The role of optimization in the production process.
- Process scheduling systems using PC.
- Digital design and construction.
- The role of simulation in the production process of the product.
- Production-oriented design.
- Parallel Design Methods.

The course exercises are done one (1) hour per week. Attendance by students is mandatory by at least 50%. The teacher points out the importance of this monitoring, but also of the theory, while incentives are given for the continuous participation of the students in it.
Essentially, the exercises in the course are a continuation of the theory, where exercises that have practical application in the subject of CAD-CAM-CAE systems are solved. The exercises aim for the student to maximize the knowledge acquired from the theoretical part through practical practice and the development of constructive dialogue.
From the 1st week of the course, the teacher gives a list of possible topics related to the course material, and the students are asked to choose a case for elaborating their work. At the same time, the lecturer presents the application of the commercial software systems CAD / CAM / CAE in the Furniture Industry.
The relevant directions are given, while rich material and instructions are posted in the e-class.
The final work of the course includes, in addition to its writing, a public oral presentation on the chosen topic on a set date (usually in the 12th week of the course). The working grade is calculated at 20% in the course's final grade. The remaining percentage concerns the final written examination of the course theory.

4. TEACHING AND LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY METHOD</td><td>In the class</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES</td><td>• Use of appropriate CAD / CAM / CAE software
• Learning process support through the electronic platform e-class
• Use of supervisory tools
• Fifteen (15) PCs in the Laboratory for student training in a CAD-CAM - CAE system program</td></tr>
<tr><td>MANAGEMENT OF TEACHING</td><td>
<table>
<tr><th>Activity</th><th>Semester Workload</th></tr>
<tr><td>Lectures</td><td>26</td></tr>
<tr><td>Semester work</td><td>60</td></tr>
<tr><td>Laboratory Exercises</td><td>13</td></tr>
<tr><td>Self-dependent study</td><td>51</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Course Total
(25 hours of workload per credit unit)</td><td>150</td></tr>
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<tr><td>STUDENT EVALUATION</td><td>I. Written final exam (80%), which includes:
- Short answer questions from all the material in the book
-Problem-solving
-Multiple-choice questions</td></tr>
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	II. Presentation of work (20%)

5. RECOMMENDED-BIBLIOGRAPHY

-Books

- Βασικές αρχές συστημάτων CAD/CAM/CAE, Kunwoo Lee, Κλειδάριθμος, 2009
- CAD : principles and applications / Paul C. Barr , 1985
- Συστήματα CAD/CAM και Τρισδιάστατη Μοντελοποίηση, Νικόλαος Μπιλάλης, Εμμανουήλ Μαραβελάκης, Εκδόσεις Κριτική, Αθήνα, 2009.
- Cad : προγραμματισμός, σχεδίαση / Theo Bernatz, Gerhard Lammlin, Gerhard Rodrian , 1993
- CAD CAM : principles, practice, and manufacturing management / Chris McMahon, Jimmie Browne, 1998.
- Mastering CAD/CAM, Ibrahim,Zeid, McGraw-Hill Education – Europe, 2004.

-Journals:

- Journal of Computer Aided Design
- International Journal Of Computer Aided Engineering and Technology
- International Journal of Computer Aided Manufacturing