| a) General | | | |
|---|---|---|---|
| *School* | ENGINEERING | | |
| *Academic unit* | MECHANICAL ENGINEERING | | |
| *Level of studies* | Undergraduate | | |
| *Course code* | MM002Y05 | *Semester* | Number |
| *Course title* | **Computer Aided mechanical Design II** | | |

| *Independent teaching activities* | *Weekly teaching hours* | *ECTS* |
|---|---|---|
| Lectures | 2 | 5.5 |
| Laboratory exercises | 3 | |

| | |
|---|---|
| *Course type* | Special background |
| *Course category* | Compulsory |
| *Prerequisite courses* | - |
| *Language of instruction and examinations* | Greek/English |
| *Is the course offered to Erasmus students* | Yes |
| *Course website (url)* | https://moodle.uniwa.gr/course/view.php?id=251 |

## b) Learning outcomes and general competences

### b1. Learning outcomes

Upon successful completion of this course, the student will be able to:

- know the fundamental principles of modern 3D CAD modelers
- understand modeling techniques for the optimal design of mechanical components
- efficiently implement 3D modeling methods to conduct complex technical drawings
- identify and evaluate any CAD system, based on designs to be conducted in line with their capabilities
- Compiles components for the production of complex assemblies
- Analyses the needs of related technologies (CAM, CAE, 3D Printing) with regard to the CAD underlying geometric model.

### b2. General competences

- Search for, analysis and synthesis of data and information with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Working independently
- Team work
- Working in an international environment
- Working in an interdisciplinary environment
- Project planning and management
- Respect for difference and multiculturalism
- Respect for the natural environment

## c) Syllabus

Introduction to 3D Computer Aided Design, 3D modeling methodology, Analysis of modern 3D CAD modelers, Solid model creation methods, Boolean operations, Form changing functions, Modeling of machine elements and components, Creation of mechanical assemblies, Technical designs according to standardization, Wireframe/Surface/Solid modelers, Parametric/Direct modelers, CAD collaboration with CAM systems, CAE, additive manufacturing, Industrial case studies.

<table>
<tr><td colspan="3">d) Teaching and learning methods - Evaluation</td></tr>
<tr><td>Delivery</td><td colspan="2">Face-to-face, Distance learning, etc.</td></tr>
<tr><td>Use of information and communications technology</td><td colspan="2">- Commercial/free/open source software<br>- Multimedia applications<br>- MS Teams/Moodle<br>- Open courses</td></tr>
<tr><td rowspan="7">Teaching methods</td><td>Activity</td><td>Semester workload</td></tr>
<tr><td>Lectures</td><td>26</td></tr>
<tr><td>Tutorials</td><td></td></tr>
<tr><td>Laboratory exercises</td><td>39</td></tr>
<tr><td>Computational exercises</td><td></td></tr>
<tr><td>Individual work</td><td>91</td></tr>
<tr><td>Course total</td><td>156</td></tr>
<tr><td>Student performance evaluation</td><td colspan="2">Theoretical part: Final Exam<br>Laboratory assessment: Final exam based on laboratory exercises / Assessment on individual and group-based projects</td></tr>
<tr><td colspan="3">e) Suggested bibliography</td></tr>
<tr><td colspan="3">1. Μπιλάλης, N. και Μαραβελάκης, E. (2014). Συστήματα CAD/CAM και τρισδιάστατη μοντελοποίηση. Εκδόσεις Κριτική<br>2. Faux, I.D. and Pratt, M.J. Computational Geometry for Design and Manufacture. Publisher: Ellis Horwood Ltd<br>3. Kuang-Hua Chang (2014). Product Design Modeling using CAD/CAE. Academic Press.<br>4. Συναφή επιστημονικά περιοδικά: Computer Aided Design (Elsevier Science), Computer aided geometric design (Elsevier Science).</td></tr>
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