## COURSE OUTLINE

### (1) GENERAL

<table>
<thead>
<tr>
<th>SCHOOL</th>
<th>SCHOOL OF ENGINEERING</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEPARTMENT</td>
<td>DEPARTMENT OF MECHANICAL ENGINEERING</td>
</tr>
<tr>
<td>LEVEL OF STUDIES</td>
<td>UNDER GRADUATE</td>
</tr>
<tr>
<td>COURSE CODE</td>
<td>2703001</td>
</tr>
<tr>
<td>SEMESTER</td>
<td>3th</td>
</tr>
<tr>
<td>COURSE TITLE</td>
<td>MACHINE ELEMENTS I</td>
</tr>
</tbody>
</table>

**INDEPENDENT TEACHING ACTIVITIES**

<table>
<thead>
<tr>
<th>WEEKLY TEACHING HOURS</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lectures</td>
<td>5</td>
</tr>
</tbody>
</table>

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.

Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).

### COURSE TYPE

Compulsory Specialization Course

### PREREQUISITE COURSES:

270301 Strength of Materials

### LANGUAGE OF INSTRUCTION and EXAMINATIONS:

Greek (official)- English (optional)

### IS THE COURSE OFFERED TO ERASMUS STUDENTS

YES

### COURSE WEBSITE (URL)

- [http://moodle.teipir.gr](http://moodle.teipir.gr)
- [http://mecheng.teipir.gr/?page_id=112](http://mecheng.teipir.gr/?page_id=112)
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 course aims to introduce students to study the main machine elements calculation and the correct element type selection for any application. The study of each Machine Element includes the analysis of the geometry, construction materials, the most common loading conditions, the analytical calculation, the design, the manufacturing methods and how it functions in a mechanical set.

Upon completion of the course, students will be able to:

- Describe and identify the main Machine parts and their subcategories.
- Design and develop the appropriate element for each application.
- Analyze the stress-strain state of each element under loading.
- Calculate the strength of each case study.
- Select materials and processing method of non-standard elements.
- Design and analyze Mechanical multiple-element arrangements.
- Predict potential failure conditions
- Specify maintenance program of every element
- Make damage assessment

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, Analysis and Synthesis of data and information with the use of new technologies
- Decision Making
- Production of new research ideas

1. Introduction
2. Tolerance - Connectors
3. Introduction to Dynamic Loading
4. Shafts-Spindles
5. Shaft-Hub Connections
6. Screws-Fasteners  
7. Mechanical Springs  
8. Rolling Contact Bearings  
9. Journal Bearings  
10. Couplings-Clutches

(4) TEACHING and LEARNING METHODS - EVALUATION

<table>
<thead>
<tr>
<th>DELIVERY</th>
<th>Face to face</th>
</tr>
</thead>
<tbody>
<tr>
<td>USE OF INFORMATION AND COMMUNICATION TECHNOLOGY</td>
<td>Teaching using ICT</td>
</tr>
<tr>
<td>The manner and methods of teaching are described in detail.</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>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</td>
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<table>
<thead>
<tr>
<th>Activity</th>
<th>Semester workload</th>
</tr>
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<tbody>
<tr>
<td>Lectures</td>
<td>39</td>
</tr>
<tr>
<td>Class work/Workshop</td>
<td>26</td>
</tr>
<tr>
<td>Educational visits</td>
<td>10</td>
</tr>
<tr>
<td>Students Study</td>
<td>50</td>
</tr>
<tr>
<td>Course total</td>
<td><strong>125</strong></td>
</tr>
</tbody>
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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.

Written examination: 100%

(5) ATTACHED BIBLIOGRAPHY