Course guide
205606 - 205606 - Simulation and Mechanical Design

Unit in charge: Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 712 - EM - Department of Mechanical Engineering.

Degree: MASTER'S DEGREE IN RESEARCH IN MECHANICAL ENGINEERING (Syllabus 2021). (Compulsory subject).
Academic year: 2022  ECTS Credits: 4.5  Languages: Catalan

LECTURER
Coordinating lecturer: Domenèch Mestres, Carlos
Others: Blanco Romero, Maria Elena
         Caballero Flores, David
         Domenèch Mestres, Carlos

PRIOR SKILLS
Knowledge of machine design

TEACHING METHODOLOGY
The teaching methodology is based on two types of activities. Classes in which the teacher provides concepts and knowledge and through practical exercises illustrates how to apply knowledge exposed to situations and solving real problems. It is a class of 1 hours each week. Practical sessions in small groups in which students perform activities under the supervision of a teacher. There are practical sessions where the students become familiar with various aspects of machine design methodology guided by the teacher in the perspective of the job done for the course. It is a session of 2 hours every week. The work of the course is delivered at the end of the course.

LEARNING OBJECTIVES OF THE SUBJECT
Objective: To ensure that students acquire knowledge of simulations and mechanical design. To integrate the tools and the knowledge acquired in other subjects in the development of mechanical projects.

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self study</td>
<td>72,0</td>
<td>64.00</td>
</tr>
<tr>
<td>Hours large group</td>
<td>22.5</td>
<td>20.00</td>
</tr>
<tr>
<td>Hours small group</td>
<td>18.0</td>
<td>16.00</td>
</tr>
</tbody>
</table>

Total learning time: 112.5 h
CONTENTS

Simulation and mechanical design tools

Description:
3D design. Design of parts and assemblies with Creo PTC
Detail design. Elaboration of drawings with Creo PTC
Simulation of mechanisms with Creo PTC
Finite element simulation with Creo PTC

Specific objectives:
Integrate all the knowledge acquired in other subjects.

Full-or-part-time: 49h
Theory classes: 10h
Practical classes: 7h 30m
Self study: 31h 30m

Project

Description:
It will be conducted individually at home and at practical classes following the directions of these practical classes.
It consists in the practical application of the simulación ad mechanical design tools presented during this course and in previous matters of the master.

Full-or-part-time: 63h 30m
Theory classes: 12h 30m
Laboratory classes: 10h 30m
Self study: 40h 30m

GRADING SYSTEM

The rating system is:
Work the subject A: 3/10 points
Work the subject B: 4/10 points
Final exam: 3/10 points

EXAMINATION RULES.

The final delivery of each work and partial deliveries (weekly or fortnightly) are mandatory.

BIBLIOGRAPHY

Basic:

Complementary:
- Mott, Robert L; González Pozo, Virgilio; Saldaña Sánchez, Sergio; Hernández Fernández, Ángel; Villanueva Sánchez, Jaime. Diseño