Universidad Zaragoza

Academic Year/course: 2024/25

39611 - Mechanical Engineering

Syllabus Information

Academic year: 2024/25
Subject: 39611 - Mechanical Engineering
Faculty / School: 175 - Escuela Universitaria Politécnica de La Almunia
Degree: 608 -
ECTS: 6.0
Year: 2
Semester: First semester
Subject type: Compulsory
Module:

1. General information

The purpose of this course is for students to acquire the competences of the module common to the industrial branch**"Knowledge of the principles of the theory of machines and mechanisms"** (According to the Order CIN/351/2009).

The subject "Mechanical Engineering" is mandatory and belongs to the *Mechanics Module* within the Mechatronics Engineering Degree. In the current *study plan*, it has a course load of 6 ECTS and is taught in the first semester of the second year.

2. Learning results

- Knowledge of movement composition.
- To know how to define and identify the motion parameters of a mechanical system and its degrees of freedom.
- Understanding and application of the forces generated in the interaction between solids in mechanical systems.
- Understanding and application to mechanical systems of the concepts of center of masses and inertia tensor.
- Application of vector theorems to mechanical systems and interpretation of the results obtained.
- Knowledge and application of mechanical systems modeling software.

3. Syllabus

According to the verification report of the degree in "Brief description of the contents of the course", the following is stated in the "Brief description of the contents of the course" the following appears:

- Kinematics of mechanisms.
- Mechanism dynamics.
- Vibrations of mechanisms.

For this reason, these five topics of the course have been programmed:

Topic 1: Structural Analysis of Flat Mechanisms.

Topic 2: Kinematic Analysis of Flat Mechanisms.

Topic 3: Dynamic Analysis of Flat Mechanisms.

Topic 4: Kinematic Analysis of Gears and Gear Trains.

Topic 5: Theory of Mechanical Vibrations.

4. Academic activities

In order to carry out the time distribution, we use as a measure the teaching week, in which the students must dedicate a total of **10 hours/week** to the study of the subject.

- Theory classes and examples (2h/week): sessions to develop the content of the course.
- Problem-solving classes [1h/week]: solving problems of varying complexity.
- Practical classes with software [1h/week]: solving with software of mechanical analysis.
- Tutored activities (2h/week).
- Study and preparation of evaluation tests [2 hours/week]
- Resolution of continuous assessment exercises [2 hours/week]

5. Assessment system

Concept	Percentage	Evaluation Criteria

A: Written Tests. Three compulsory written tests will be carried out 1st SP on topics 1 and 2 2nd SP on item 3 3rd SP on topics 4 and 5	50%	Minimum grade for each test≥ 3.0 Minimum grade for Block (A) ≥ 4.0
B: Continuous Assessment Exercises. A total of 5 continuous evaluation exercises will be carried out (one for each topic) subject) with obligatory character	30%	Minimum grade for each exercise≥ 3.0 Minimum grade for Block (B) ≥ 4.0
C: Simulation Practices. Three compulsory practice sessions will be conducted 1st Practice on topic 2 2nd Practice on topic 3 3rd Practice on topic 4	20%	Minimum grade for each practical ≥ 3.0 Minimum Block Grade (C) ≥ 4.0
Average grade of the subject = 50%A+30%B+20%C ≥ 5.0		

A minimum grade of 5.0 must be obtained in order to pass the subject and all prerequisites must be fulfilled. Students who have passed the subject through this dynamic, may opt in the ordinary call to raise the grade (presenting to the full subject)

In case of not passing with the previous system, there will betwo additional calls (Ordinary and Extraordinary) with a Global Assessment Test, which reflects the achievement of the learning results. This test will be unique with theory and exercises representative of the entire syllabus of the subject contributing 100% to the final grade of the course.

6. Sustainable Development Goals

4 - Quality Education
5 - Gender Equality
9 - Industry, Innovation and Infrastructure