

Academic Year/course: 2021/22

## 25873 - Mechanism Design

### Syllabus Information

---

**Academic Year:** 2021/22

**Subject:** 25873 - Mechanism Design

**Faculty / School:** 110 - Escuela de Ingeniería y Arquitectura

**Degree:** 558 - Bachelor's Degree in Industrial Design and Product Development Engineering

**ECTS:** 6.0

**Year:** 2

**Semester:** First semester

**Subject Type:** Compulsory

**Module:**

### 1. General information

### 2. Learning goals

### 3. Assessment (1st and 2nd call)

### 4. Methodology, learning tasks, syllabus and resources

#### 4.1. Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. It is based on participation and the active role of the student favors the development of communication and decision-making skills. A wide range of teaching and learning tasks are implemented, such as lectures, study cases, assignments, lab sessions, autonomous work, and tutorials. Students are expected to participate actively in the class throughout the semester.

Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, the course syllabus, as well as other course-specific learning materials. Further information regarding the course will be provided on the first day of class.

#### 4.2. Learning tasks

The course includes the following learning tasks:

?Lectures. Lectures run for 2 weekly hours. The teacher explains the course contents and solves representative applied problems. These problems and exercises can be found in the problem set provided at the beginning of the course. Regular attendance is highly recommended. M1,

Study cases allow applying concepts to real study cases. M4, M5, M8

?Computer lab sessions. Sessions will take place every 2 weeks (6 sessions in total) and they last 2 hours each. Students will work together in a group doing tasks such as practical demonstrations, measurements, calculations, and the use of graphical and analytical methods. M3, M8, M9.

?Assignments. Students will complete a project assignment related to concepts seen in laboratory sessions and lectures. The project will be submitted at the beginning of the course so as to be discussed and analyzed. M4, M7, M13.

?Autonomous work. Students are expected to spend about 36 hours to study theory, solve problems, prepare sessions, and take exams. M11, M14, M15.

?Tutorials. Teacher's office hours allow students to solve questions and discuss unclear course contents. It is advisable to come with clear and specific questions. M10

#### 4.3. Syllabus

The course will address the following topics:

1. Basic concepts of mechanisms.
2. Position analysis
3. Bars mechanisms
4. Cam mechanisms
5. Gear mechanisms
6. Pulley mechanisms
7. Screw mechanisms
8. Static analysis of mechanisms
9. Dynamic analysis by energetic laws
10. Mechanical design criteria. Stiffness.

#### **4.4. Course planning and calendar**

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class or please refer to the EINA website (<http://eina.unizar.es>).

#### **4.5. Bibliography and recommended resources**

Please, refer to [http://biblos.unizar.es/br/br\\_citas.php?codigo=25873&year=2019](http://biblos.unizar.es/br/br_citas.php?codigo=25873&year=2019)