30054 - Mechanical Systems in Machines and Vehicles

Syllabus Information

Academic Year: 2020/21
Subject: 30054 - Mechanical Systems in Machines and Vehicles
Faculty / School: 110 - Escuela de Ingeniería y Arquitectura
Degree: 436 - Bachelor's Degree in Industrial Engineering Technology
ECTS: 6.0
Year: 4
Semester: Second semester
Subject Type: Optional
Module: ---

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The methodology followed in this course is oriented towards 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, guided assignments, laboratory 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 6 ECTS organized according to:

- Lectures (1.8 ECTS): 45 hours.

- Laboratory sessions and problem?solving activities (0.6 ECTS): 15 hours.

- Guided assignments (1.4 ECTS): 35 hours.

- Autonomous work (2 ECTS): 50 hours.

- Tutorials (0.2 ECTS): 5 hours.

Lectures: the professor will explain the theoretical contents of the course and solve illustrative applied problems. These problems and exercises can be found in the problem set provided at the beginning of the semester. Lectures run for 3 weekly hours. Although it is not a mandatory activity, regular attendance is highly recommended.

Laboratory sessions and problem?solving activities: sessions will take place every 2 weeks (5 sessions in total, 3 hours each). Students will work together in groups actively doing tasks such as practical demonstrations, measurements, calculations, and the use of graphical and analytical methods.

Guided assignments: students will complete assignments, problems and exercises related to concepts seen in laboratory sessions and lectures. The dates of delivery of each guided assignments will be indicated in the course guide. If assignments are submitted later, students will not be able to take the assessment test.

Autonomous work: students are expected to spend about 60 hours to study theory, solve problems, prepare lab sessions, and take exams.

Tutorials: the professor's office hours will be posted on Moodle and the degree website to assist students with questions and doubts. It is beneficial for the student to come with clear and specific questions.

4.3.Syllabus

? Mechanical, pneumatic and hydraulics

? Brakes and clutches

? Variable speed drives, belts and chains.

? Calculation and dimensioning of springs

? Using computer systems applied to the sizing of mechanical systems in machines and vehicles assisted.

? Legislation applied to the automobile (national and European environment)

? Chassis and reforms in vehicles

? Calculation of transmission system components in vehicles

? Calculation of the braking system components in vehicles

? Calculation of components of the steering system on vehicles

? Calculation of suspension components in vehicles

4.4.Course planning and calendar

For further details concerning the timetable, classroom and further information regarding this course please refer to the Escuela de Ingeniería y Arquitectura, EINA, website https://eina.unizar.es/

4.5.Bibliography and recommended resources

Link:
http://biblos.unizar.es/br/br_citas.php?codigo=30054&year=2019