Academic Year/course: 2021/22

29705 - Mathematics II

Syllabus Information

Academic Year: 2021/22
Subject: 29705 - Mathematics II
Faculty / School: 110 - Escuela de Ingeniería y Arquitectura
Degree: 434 - Bachelor's Degree in Mechanical Engineering
ECTS: 6.0
Year: 1
Semester: 434-First semester o Second semester
107-Second semester
Subject Type: Basic Education
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, guided assignments, laboratory sessions, autonomous work, and tutorials.

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 (1.68 ECTS): 42 hours.

- Laboratory sessions (0.48 ECTS): 12 hours.

- Guided assignments (0.24 ECTS): 6 hours.

- Autonomous work (3 ECTS): 75 hours.

- Tutorials (0.6 ECTS): 15 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 sets provided by the professor. Lectures run for 3 weekly hours. Although it is not a mandatory activity, regular attendance is highly recommended.

Laboratory sessions: sessions will take place every 2 weeks (6 sessions in total) and last 2 hours each. Students will use mathematical software to work on the contents of the course.

Guided assignments: Students will work together in groups and they will complete assignments, problems and exercises related to concepts seen in laboratory sessions and lectures.

Autonomous work: students are expected to spend about 75 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

The course will address the following topics:
Section 1. Linear Algebra

1. Matrices, determinants and ranks.
2. Linear systems and numerical methods.
3. Vector spaces.
4. Linear applications.
5. Diagonalization.

Section 2. Geometry

1. Euclidean geometry. Inner product. Orthogonalization and applications.
2. Differential geometry: curves, Frenet frame, representation of plane curves.

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 " website (https://eina.unizar.es/)

4.5. Bibliography and recommended resources

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