

Academic Year/course: 2022/23

66430 - Advanced design of home appliances

Syllabus Information

Academic Year: 2022/23

Subject: 66430 - Advanced design of home appliances

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 536 - Master's in Mechanical Engineering

ECTS: 4.5

Year: 1

Semester: Second semester

Subject Type: Optional

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, assignments, computer 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, including a discussion forum.

Further information regarding the course will be provided on the first day of class.

4.2. Learning tasks

This is a 4.5 ECTS course organized as follows:

?Lectures (3 ECTS: 33 hours). 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.

?Computer lab sessions (1 ECTS: 12 hours). Sessions will take place every 2 weeks (4 sessions in total) and they last 3 hours each. Students will work together in groups doing tasks such as practical demonstrations, measurements and calculations.

?Assignments (0.5 ECTS: 9 hours). Students will complete assignments, problems and exercises related to concepts seen in laboratory sessions and lectures. Assignments will be submitted at the beginning of every session so as to be discussed and analyzed. If they are submitted later, students will not be able to take the assessment test.

?Autonomous work (27.5 hours). Students are expected to spend about 75 hours to study theory, solve problems, prepare sessions, and take exams.

?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.

4.3. Syllabus

The course will address the following topics:

Thermal module:

1. Energetic labelling for home appliances.
2. Thermal simulation
3. Design process, thermal constraints.
4. Materials selection.

Mechanical module:

- 1.- Polymers for home appliances.
- 2.- Mechanical behaviour for engineering materials: creep, fatigue, temperature.
- 3.- Design of home appliances components regarding mold and machine.
- 4.- Structural analysis of components for home appliances (fridge, washing machine and induction hobs.
- 6.- Equipment for noise and vibration measurement.
- 7.- Modal analysis
- 8.- Operational tests

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>).