

Academic Year/course: 2022/23

66380 - Thermal energy storage

Syllabus Information

Academic Year: 2022/23

Subject: 66380 - Thermal energy storage

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 636 - Master's in Renewable Energies and Energy Efficiency

ECTS: 3.0

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 favours 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 the following learning tasks:

- **Lectures** (22.5 hours, two hours per week). Explanation of the theory of the syllabus and solving of "model" problems.
- **Practice sessions** (5 hours). In these classes, students solve problems supervised by the teacher. Problems or case studies will be related to the theoretical part explained in lectures. These will be made individually or in pairs supervised by teachers. The assessment of the work informs of the student's achievement of the programmed learning objectives.
- **Technical visit.** Students accompanied by the lecturer will visit a technical facility showing the real operation of a thermal energy storage system
- **Study.** It is recommended to study continuously throughout the semester.
- **Assessment tests.** A final exam will be conducted to evaluate the theoretical and practical knowledge gained by the student.

4.3. Syllabus

The course will address the following topics:

1. Introduction to thermal energy storage and energy transition
2. Thermal energy storage systems: benefits, sensible heat storage, latent heat storage, thermochemical heat storage
3. Materials
4. Numerical modelling
5. Energy integration of thermal energy storage in complex energy systems and performance parameters

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.

The laboratory sessions will be scheduled depending on the number of students and will be previously announced. The laboratory sessions will focus on practical cases of thermal energy storage.