

Course guide

220060 - 220060 - Unit Operation in Engineering

Last modified: 22/04/2021

Unit in charge: Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 714 - ETP - Department of Textile and Paper Engineering.

Degree: **Academic year:** 2021 **ECTS Credits:** 3.0
Languages: English

LECTURER

Coordinating lecturer: Cusola Aumedes, Oriol

Others:

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

1. A basic understanding of, and ability to apply, environmental technologies and sustainability principles
2. An understanding of the basic principles of fluid mechanics and their application in solving engineering problems. The ability to calculate pipes, channels and fluid systems.
3. A basic understanding of industrial production systems.

TEACHING METHODOLOGY

The course is structured in three parts:

- Theory classes
- Practical classes
- Self-study for doing exercises and activities.

In the theory classes, teacher will introduce the theoretical basis of the concepts, methods and results and illustrate them with appropriate examples to facilitate their understanding.

In the practical classes (laboratory or visit to an industrial facility), teacher guide students in applying theoretical concepts, always using critical reasoning. We propose to the students to prepare an oral presentation about a specific unit operation, which is going to be presented in the classroom.

Students, independently, need to work on the materials provided by teachers and the outcomes of the sessions of exercises/problems, in order to fix and assimilate the concepts.

The teachers provide the syllabus and monitoring of activities (by ATENEA).

LEARNING OBJECTIVES OF THE SUBJECT

In this course students will learn about the principles of several mechanical separations.

The syllabus covers the basic principles of those unit engineering operations and their application to different industrial processes, from water and waste water treatment to industrial facilities.

STUDY LOAD

| Type | Hours | Percentage |
|-------------------|-------|------------|
| Hours large group | 30,0 | 40.00 |
| Self study | 45,0 | 60.00 |

Total learning time: 75 h



CONTENTS

Mechanical separations

Description:

Introduction to unit operation in engineering. Screening and sieving. Filtration. Membrane separation processes. Sedimentation and centrifugal sedimentation processes. Flotation separation.

Full-or-part-time: 75h

Theory classes: 30h

Self study : 45h

GRADING SYSTEM

The final grade depends on the following assessment criteria:

- Proposal for questions related to course topics by the students, weight: 20%
- Written reports and assistance to laboratory work and industrial facility visit, weight: 20%
- Students presentations about unit operations, weight: 20%
- Final exam, weight: 40%

BIBLIOGRAPHY

Complementary:

- McCabe, W.L.; Smith, J.C.; Harriott, P. Unit operations of chemical engineering. 7th ed. Boston [etc.]: McGraw-Hill, 2005. ISBN 0071247106.
- Metcalf & Eddy. Wastewater engineering: treatment and reuse. 4th ed. Boston [etc.]: McGraw-Hill, 2003. ISBN 0070418780.