

66210 - Advanced Separation Processes

Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	531 - Master's in Chemical Engineering
ECTS	6.0
Course	1
Period	First semester
Subject Type	Compulsory
Module	---

1. Basic info

1.1. Recommendations to take this course

1.2. Activities and key dates for the course

2. Initiation

2.1. Learning outcomes that define the subject

2.2. Introduction

3. Context and competences

3.1. Goals

3.2. Context and meaning of the subject in the degree

3.3. Competences

3.4. Importance of learning outcomes

4. Evaluation

5. Activities and resources

5.1. General methodological presentation

The learning process that has been designed for this subject is based on the following:

The learning process will take place at several levels: masterclasses, problem solving (case studies) and practical work, deliverables and oral presentations, requiring a progressive increase in student participation. Masterclasses will provide the theoretical basis that makes up the subject as well as solutions for key exercises. Practical cases, problem-solving sessions and practical work constitute an effective complement to masterclasses. The combination of both practical and theoretical sessions will provide the student a more applied and critical point of view. The deliverables (essays) will constitute the most important part of the evaluation in which the students will establish the basis of their academic

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success.

5.2.Learning activities

The program offered to the students includes the following activities...

In the masterclasses (30 h), the theoretical basis of the different proposed subjects will be exposed and analyzed and key problem examples will be resolved.

Problem solving and practical cases attendance- based sessions (15 h). The students will solve problems supervised by the lecturers. Problems and/or case studies will be related to the theoretical aspects explained during the Masterclasses.

Practical sessions (12 h) in which the student will perform advanced searches and solve complex problems. These sessions will culminate the different subjects. The lecturers will assist the students at the beginning of the different exercises and these exercises will be finished by the students (either individually or in groups of 2-3 people, depending on the difficulty, essays extension, facilities availability, etc.). Most of the practical sessions will require a deliverable (essay) to be revised and assessed by the teacher.

Special sessions (3 h) corresponding to the visit to an company, expert's talks, themed seminars, debate with the option of the presence of an external professional, etc..

Self-study (64h). The student is strongly recommended to carry out individual study in a continuous manner during the semester.

The previous practical sessions as well as individual oral presentations will require other non-classroom (self-study) 20 h.

Final evaluation (6 h). Students will perform a final examination with supporting material (books and notes). The students will show, individually, the acquired theoretical and practical skills, as well as their ability to develop critical thinking in specific questions related to the different subjects.

5.3.Program

Sessions calendar and essays presentation

Master classes and problem-solving sessions will be held according to the EINA schedule.

Each teacher will inform about the tutorial session schedules. The module's program is the following:

Chapter 1. General introduction (1 h).

Chapter 2. Operations with solids. General concepts and solids conditioning (5 h).

Chapter 3. Fixed beds and fluidized beds (8 h).

Chapter 4. Mechanical separation of solids. Filtration (5 h).

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Chapter 5. Separation of fluids by adsorption (6 h).

Chapter 6. Membrane separation processes (7 h).

Chapter 7. Drying of solids (6 h).

Chapter 8. Evaporation (5 h).

Tema 9. Crystallization (6 h).

Chapter 10. Process intensification (4 h).

Chapter 11. Selection of separation processes (7 h).

5.4.Planning and scheduling

Sessions and presentations scheduling

Master classes and problem-solving sessions are held according to the EINA schedule.

Each teacher will inform to the student about the tutorial session schedules.

5.5.Bibliography and recommended resources

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| BB | Coulson, John Metcalfe. Chemical engineering / J.M Coulson and J.F. Richardson. Vol. II, Particle technology and separation processes / with J.R. Backhurst y J.H. Harker . - [4th. ed., repr. with revisions] Oxford [etc.] : Butterworth Heinemann, 1996 |
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