60434 - Economic and applied mineralogy

Información del Plan Docente

Academic Year	2018/19
Subject	60434 - Economic and applied mineralogy
Faculty / School	100 - Facultad de Ciencias
Degree	541 - Master's in Geology: Techniques and Applications
ECTS	5.0
Year	1
Semester	Second semester
Subject Type	Optional
Module	---

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The learning process designed for this course is based on a wide range of teaching and learning tasks. The methodology provides the students with the necessary coordination between the theoretical knowledge and the practical application, always focused on the actual problems related with the subject.

4.2.Learning tasks

The course is given in the second term and consists of 5 ECTS distributed in the following activities:

Activity 1. Lectures (2,4 ECTS) Development of the concepts and theoretical basis of the course (2,4 ECTS).

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Activity 2. **Resolution of problems and practical cases** (0,8 ECTS): these classes will be dedicated to the characterisation and evaluation of the different applications of the mineral resources and the analyses of the associated environmental problems.

Activity 3. Laboratory Sessions (1 ECTS): identification of industrial minerals and synthesis of crystals in the laboratory.

Activity 4.Field Session (0,8 ECTS): *in situ* study of mineral resources and/or contamination problems related with them.

4.3.Syllabus

LECTURES

Topic 1.- Industrial minerals and their applications.

Topic 2.- Crystals synthesis.

Topic 3.- Biominerals.

Topic 4.- Minerals with effects on human health.

Topic 5.- Environmental Impact of mining. Effects on the atmosphere,hydrosphere and soils.

Topic 6.- Mining and restoration. Mining and prevention.

Topic 7.- Generation of acidic waters and associated mineral phases.

Topic 8.- Minerals used for mitigation-depuration of contamination and for wastes storage.

PRACTICAL SESSIONS

Session 1.- Identification, by X-Rays diffraction, of industrial minerals, biominerals and synthetic crystals.

Session 2.- Synthesis of crystals in the laboratory.

Session 3.- Evaluation of mineralogical contamination.

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Session 4.- Geochemical calculations of contamination and mitigation processes.

Session 5.- Field trip.

4.4.Course planning and calendar

The course planning includes:

- Hours of Lectures: 24
- Hours of resolution of practical cases: 8
- Hours of laboratory: 10
- Hours of Fieldwork: 8
- Hours of autonomous work: 72 + 3 for the exams.

The clases will start at the beginning of the second semester following the academic calendar of the Sciences Faculty.

The lectures will be given in the classrooms and timetables indicated in the web page of the Sciences Faculty.

The practical sessions will be given in the laboratories of the Crystallography and Mineralogy and Petrology and Geochemistry Areas of the Earth Sciences Department.

The exact dates for the evaluation activities will be informed through the "Anillo Digital Docente (https://moodle2.unizar.es)" and the information board in the Crystallography and Mineralogy area.

4.5.Bibliography and recommended resources