Universidad Zaragoza

Academic Year/course: 2022/23

60378 - Applied Mineralogy

Syllabus Information

Academic Year: 2022/23
Subject: 60378 - Applied Mineralogy
Faculty / School: 100 - Facultad de Ciencias
Degree: 624 - Master's in Geology: Techniques and Applications
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 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. The proposed activities are focused on the application of the acquired knowledge. For this reason, this knowledge acquired in lectures will complement each other with the practical activities of laboratory and seminars, where the students will have to demonstrate their knowledge.
The basic theoretical content -cited in point 4.3- will be taught through expository sessions in the classroom. In the practice sessions -problem and case resolution-, after a brief introduction, students will work autonomously with mineral exploration maps and with rock and mineral specimens and their corresponding X-ray diffraction diagrams. To proceed with the identification of phases, diffraction data sheets and databases and reference books will be available. Regarding the laboratory practice, the synthesis of ADP crystals will be practiced in the laboratory, analyzing the influence of some variables on the final result of the crystallization process.

4.2. Learning tasks

The course is organized as follows:

Activity 1. Lectures (1,8 ECTS) Development of the concepts and theoretical basis of the course.

Activity 2. **Resolution of problems and practical cases** (1ECTS): these classes will be dedicated to the characterization and evaluation of the different applications of the mineral resources.

Activity 3. Laboratory Sessions (0,2 ECTS): identification of industrial minerals and synthesis of crystals in the laboratory.

The teaching and assessment activities will be carried out on-site (face-to-face) unless, due to the exceptional health situation, the provisions issued by the competent authorities and by the University of Zaragoza provide for

them to be carried out off-site (telematically), except for field practices.

4.3. Syllabus

LECTURES

Topic 1.- Crystals and crystal growing.

Topic 2.- Industrial minerals.

Topic 3.- Minerals and crystals for optics and electronics

Topic 4.- Crystal synthesis methods.

Topic 5.- Biominerals.

Topic 6.- Critical, strategic and High_Green-Tech resources: Introduction.

Topic 7.- High_Green-Tech resources.

Topic 8.- Strategic resources.

PRACTICAL SESSIONS

Session 1 and 2.- Identification, by X-Rays diffraction, of industrial minerals and biominerals.

Session 3.- Synthesis of ADP crystals in the laboratory (I).

Session 4.- Synthesis of ADP crystals in the laboratory (II).

Session 5 and 6.- Map interpretation about critical, strategic and High_Green-Tech exploration resources.

4.4. Course planning and calendar

The course planning includes:

Hours of Lectures: 18

Hours of resolution of practical cases: 10

Hours of laboratory: 2

Hours of autonomous work: 72 + 3 for the exams.

The classes 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.

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

http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=60378