

Academic Year/course: 2022/23

26444 - Mineral Deposits

Syllabus Information

Academic Year: 2022/23

Subject: 26444 - Mineral Deposits

Faculty / School: 100 - Facultad de Ciencias

Degree: 296 - Degree in Geology
588 - Degree in Geology

ECTS: 5.0

Year: 4

Semester: Second semester

Subject Type: Optional

Module:

1. General information

1.1. Aims of the course

The subject and its learning goals results answer to the following approaches and aims:

The matter " Mineral deposits " has as principal aim that the student is capable of establishing the relation between the processes that take place during the plate tectonic and the mineral deposits formed. This knowledge establishes the basic tools in order that a geologist of exploration (economic geologist) knows the metalogenic provinces and the stratigraphic fertile horizons that are able to contain metals of economic interest. In addition, the economic evaluation of the mineralizations is the clue for carrying out studies of viability, demanded for mining companies. These studies determine, in last instance, the minimal cut-off grades that mineralizations must have for being a producing mine.

The 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth ? all while tackling climate change and working to preserve our oceans and forests. In this context, the achievement of the learnnig objectives is related with the next SDGs:

SDG 4: Quality Education

SDG 7: Affordable and Clean Energy

SDG 9: Industry, Innovation and Infrastructure

SDG 11: Sustainable Cities and Communities

SDG 12: Responsible Consumption and Production

SDG 13: Climate Action

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. A wide range of teaching and learning tasks are implemented, such as lectures, laboratory sessions, practice sessions, seminars, fieldwork, exams and autonomous work.

This course has an eminently practical character, therefore 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 student will have to demonstrate his knowledge to identify and to characterize different types of deposits, to quantify their economic value and to determine if the exploitation is viable. The seminars will serve to explain and to prepare in group the economic evaluation of a deposit.

The monitoring of the learning process will be favoured through conventional tutoring and more specific tutoring related to the report that the students have to do in practice sessions. In addition, resource material will be uploaded on the Internet (<https://moodle.unizar.es/add/>).

4.2. Learning tasks

This course is organized as follows:

- **Lectures** (29 hours). Acquisition of the theoretical knowledge on mineral deposits, genesis and distribution patterns.
- **Laboratory sessions** (8 hours)
- **Practice sessions** (4 hours). Attendance is required.
- **Seminars** (4 hours)
- **Fieldwork** (5 hours). 1-day trip. Fieldwork could be coordinate with other subjects
- **Exams** (5 hours)
- **Autonomous work and study** (70 hours)
- **Tutorials**.

Teaching and assessment activities will be carried out on site for as long and as much as possible. This scenario could change if safety regulations related to the covid19 crisis recommended online activities.

4.3. Syllabus

This course will address the following topics:

Lectures.

- Topic 1. Introduction and important definitions and compilations. Classifications most usually used in mineral deposits.
- Topic 2. Metallogeny through time: continental growth rates, crustal evolution and plate tectonics.
- Topic 3. Divergent margins and metallogeny
- Topic 4. Convergent margins and metallogeny

Practice sessions

- 1.- Identification of several mineral deposits with polarized microscopy.
- 2.- Interpretation of simple geological maps for mineral exploration. Field techniques.
- 3.- Ore reserve calculation and economic viability estimations.
- 4.- Field practices

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 Faculty of Sciences website (<https://ciencias.unizar.es>; <https://cienciatierra.unizar.es>) and Moodle.

4.5. Bibliography and recommended resources

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=26444>