

COURSE INFORMATION

NAME OF THE SUBJECT:

Geology and Economy of Mineral Resources

Code number: 757609301

Degree in Geology and Environmental Sciences

Academic Year: **2016-2017**

Elective course 4th year

Second semester: 3 hours a week (1 day) and 4 days of fieldwork

6 credits

TEACHING STAFF

Prof.: José Miguel Nieto Liñán

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Office hours:

First Semester: Monday & Tuesday, 11.00-14.00 h

Second Semester: Monday & Tuesday, 11.00-14.00 h

PROGRAMME

1. DESCRIPTION

The main objective of this course is to provide students with a general knowledge of mineral resources, from their exploration and exploitation to their most important applications and markets.

2. PREREQUISITES

Previous notions of Mineralogy, Petrology and Geochemistry are required. The course is recommended for students of Earth & Environmental Sciences. For other students please contact the teaching staff.

3. OBJECTIVES/LEARNING OUTCOMES

By the end of the module students should be able:

- To know and understand the terminology, fundamental concepts and principles of mineral resources classification.
- To analyze and synthesize the main characteristics of the different types of mineral resources and their geological contexts.
- To know the basics of the economy of mineral resources.
- To know the methods of exploitation and processing of mineral resources and to understand the concept of sustainable mining.

4. TEACHING METHODOLOGY

Theory: lecturing in the classroom using presentations and blackboard.

Field work: four visits to mining areas (active or abandoned). After each field day the student will submit a report on the work done in the field, including a description of the area visited, the mining operations, and/or the land reclamation options.

Training activities: They will consist of conducting a bibliographic work, and their subsequent oral presentation on a particular type of resource. Each student will select a mineral resource and prepare an oral presentation of about 15 minutes.

The information for the preparation of the presentation will be obtained from the following link: <http://minerals.usgs.gov/minerals/pubs/commodity/>

5. CONTENTS

I. INTRODUCTION (9 h)

1. Classification and origin of mineral resources
2. Exploitation and processing of mineral resources

II. METALLIC MINERAL RESOURCES (12 h)

3. Iron, steel and ferrous metals
4. Base metals and light metals
5. Precious metals and industrial metals

III. NON-METALLIC MINERAL RESOURCES (6 h)

- 6 Minerals with gemological interest
7. Industrial Minerals
8. Cement, aggregates and dimension stones

IV. ENERGY RESOURCES (6 h)

9. Fossil Fuels
10. Radioactive Fuel

V. ECONOMY OF MINERAL RESOURCES AND SUSTAINABLE MINING (7 h)

11. Economy of mineral resources
12. Sustainable mining

6. BIBLIOGRAPHY

- Craig, J.R., Vaughan, D.J. & Skinner, B.J. (2011). Earth Resources and the Environment. 4th Ed. Prentice Hall.
- Kesler S.E. & Simon A.C. (2015). Mineral Resources, Economics and the Environment 2nd Ed. Cambridge University Press.

7. ASSESSMENT

The knowledge and skills acquired will be evaluated together, taking into account the scores for the various training activities planned.

- The score on the final theory exam will account for 70% of the course grade.
- The score on the field reports and the training activities will account for 30% of the course grade.