



Visiting Professor Program Academic Year 2024/2025

TEACHING COMMITMENT: 20 hours

COURSE TITLE

Geonaterials and the Environment

TEACHING PERIOD

2nd term

SCIENTIFIC AREA

Mining Georesources and mineralogical-petrographic applications for the environment and the cultural heritage

LANGUAGE USED TO TEACH

English, Italian

COURSE SUMMARY

This course shares the general goal of providing a detailed knowledge of the systemic analysis of the natural environment.

Starting from an eminently petrological approach the course aims to provide information on the processes that lead to the formation of the main geo-resources used in the technological, industrial and cultural fields, on the good rules that should be followed for their sustainable exploitation, but also on those endogenous factors and exogenous, which naturally affect the continuous environmental changes that occur on our planet (volcanic eruptions, lifting of mountain ranges, production of CO₂ in the abiotic environment).

The course, organized in modules, aims to provide students with fundamental knowledge on two important topics of Economic Geology: industrial resources and metallic minerals.

LEARNING OBJECTIVES

Knowledge and understanding:

- the concept of "criticality index" of raw materials and its meaning in the contemporary world;
- being aware and being able to contextualize all the environmental consequences of the metals, rare-earth elements, and lanthanides productive cycle;
- being aware and being able to contextualize the different bioremediation methods and mineral-mediated remediation;
- being aware of general medical mineralogy aspects of the presented minerals- the main analytical techniques of characterization of "economic minerals" used in different industrial processes;
- the criteria for identifying the origin of raw materials;
- the industrial processes of transformation for the production of glasses, ceramic materials, mortars, cements and concretes;
- the classification criteria of ornamental stones in the contemporary market, as well as their petrophysical and mechanical properties and the regulatory aspects.

Investigation of minerals with environmental and health impacts using PXRD, SEM, TEM, and other dedicated techniques.

OTHER ACTIVITIES BESIDES THE COURSE

Seminars with the VP and its PhD students.

VISITING PROFESSOR PROFILE

We are looking for an international VP profile with major experiences in the broader field of geochemistry. In particular, it would be appropriate an environmental-related geochemistry-oriented profile. His/Her broad research interests should involve environmental and medical mineralogy, environmental geochemistry, energy and waste, and health impacts of atmospheric dust. A good record of supervised students and active international collaboration would be extremely appreciated.

CONTACT REFERENT

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