
COURSE: Environmental and Economic Petrography

ACADEMIC YEAR: 2019-2020

TYPE OF EDUCATIONAL ACTIVITY: Free choice

TEACHER: Giovanna Rizzo

e-mail: giovanna.rizzo@unibas.it

website:

phone: 0971/205833

mobile (optional):

Language: **English**

ECTS: 6 CFU
(4 lessons and 2 practice)n. of hours: 56 (32 lessons
and 24 practice)Campus: **Potenza**
Dept./School: **Dipartimento di
Scienze**
Program:Semester:
(date previste di
inizio e fine corso):

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

The course gives knowledge about the practical aspects of the petrography of the rocks with a focus on economic and environmental interest, such as shale, bauxite, materials for the industry (cement, mortar, etc), ceramic materials and the rocks containing asbestiform minerals. The part relating to the laboratory has the purpose to illustrate the analytical techniques used in the study of the rocks of industrial and environmental interest.

- **Knowledge and ability to understand:**

The main knowledge provided will be:

- related to different types of stone used in construction, degradation processes and actions needed to clean, preserve and protect.

- **Ability to apply knowledge and understanding:**

The student must acquire the ability to characterize the geomaterials used in modern industry, such as ceramics, glass, cement and mortar.

- **Autonomy of judgment:**

The student must be able to know the environmental and economic aspects.

- **Communication skills:**

The student must have the ability to explain with the scientific language the acquired knowledge.

- **Learning ability:**

The student must be able to update himself by consulting publications and attending courses and seminars.

PRE-REQUIREMENTS

Knowledge of Geochemistry and Petrology.

SYLLABUS

1) The stone materials (2 hours): Topic 1. Physical properties of rocks. **2) Degradation processes of stone materials (2 hours): Topic 1.** Chemical weathering, action of rain, of dust, of wind ecc. **3) Ceramics (4 hours): Topic 1.** Investigation archaeometrical. **4) The rocks with asbestiform minerals (2 hours): Topic 1.** The asbestiform minerals **Topic 2.** Use of these rocks. **5) Bauxite (4 hours) : Topic 1.** Origin, composition and industrial use. **6) Cement (4 hours). Topic 1.** Composite and calcium alluminate cement. **7) Glass (2 hours) : Topic 1.** Chemical, physical and mechanical properties. **8) Artificial stone (2 hours): Topic 1.** Lime, mortar, plaster, hydraulic binders. **9) Shales (4 hours): Topic 1.** Composition and industrial use. **10) Restoration of rocks on buildings and monuments (2 hours). Topic 1.** Cleaning of rocks. **11) Analytical technique (4 hours): Topic 1.** Cromatography. **Topic 2.** Mass Spectrometer. **Topic 3.** Raman Spectroscopy.

Technical visits and Field trip (24 hours).

TEACHING METHODS

Theoretical lessons, Laboratory tutorials, Technical visits, Field trip.

EVALUATION METHODS

Discussion of a project work

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

Notes in power point provided by the teacher at the end of each argument

Evans A.M. (2009) – Ore geology and industrial minerals: an introduction. Blackwell Scientific Publications, Oxford.

Paquet H. & Clauer N. (1997) – Soils and sediments (Mineralogy and Petrology), Springer.

Rollinson H. (1993) – Using geochemical data: evaluation, presentation, interpretation, Taylor and Francis.

Winter N.B. (2012) - Scanning electron microscopy of cement and concrete. Whd Microanalysis Consultants Ltd.

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INTERACTION WITH STUDENTS

Meet with students: Mondays from 18-19 hours; Tuesday from 17-18 hours; Wednesday from 17-19 hours; Thursday from 11-13 hours. In addition the teacher is available for a contact with the students, through their email

EXAMINATION SESSIONS (FORECAST)¹

20/06/2019; 24/07/2019; 25/09/2019; 23/10/2019; 27/11/2019; 18/12/2019; 05/02/2020; 10/03/2020; 09/06/2020; 07/07/2020; 15/09/2020; 13/10/2020; 15/12/2020;

SEMINARS BY EXTERNAL EXPERTS YES

FURTHER INFORMATION

¹Subject to possible changes: check the web site of the Teacher or the Department/School for updates.