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**ANNO ACCADEMICO: 2016-2017**

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**INSEGNAMENTO/MODULO: PETROGRAPHY**

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**TIPOLOGIA DI ATTIVITÀ FORMATIVA:** Characterizing

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**DOCENTE: Dott. Giovanna Rizzo**

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Lingua di insegnamento: **Italiano**

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**n. CFU: 10**

(7 lessons and 3 practice)

**n. ore: 92**

(56 lessons and 36 practice)

Sede: **Potenza****Dept. Science**

CdS: Scienze Geologiche

Semestre: **II**

(start:

07/03/2017, stop

29/06/2017)

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**EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES**

The course of Petrography is dedicated to understanding the petrogenetic processes such as magmatic process and the metamorphic. The goal is to provide students with the bases of petrological and geological events that originate and development within the lithosphere-asthenosphere and develop in the crust (metamorphism and plutonism) or conclude their evolutionary history by cooling the Earth's surface (volcanism).

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**PRE-REQUIREMENTS**

Knowledge of the Chemistry and Mineralogy. It's necessary to have passed the exam of the Chemistry and Mineralogy.

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**SYLLABUS**

**Introduction (2 hours): Topic 1.** Structure and composition of the Earth. **Topic 2.** The petrogenetic processes.

**The magmatic process (27 hours): Topic 1.** Physical properties of magma: magmatic temperatures, magma densities and magma viscosities, the volatile components. **Topic 2.** Phase rule. **Topic 3.** Binary systems. Ternary systems. Quaternary systems. **Topic 4.** Equilibrium crystallization and fractional crystallization. Equilibrium fusion and fractional fusion. **Topic 6.** Processes which modify the composition of primary magmas: assimilation, mixing of magmas, ecc. **Topic 7.** Igneous rock associations. **Topic 8.** Genesis of granites.

**The metamorphic process (27 hours): Topic 1.** Definition, conditions and types of metamorphism. **Topic 2.** Structure of metamorphic rocks. **Topic 3.** Classification and names of metamorphic rocks. **Topic 4.** Zeolites facies. **Topic 5.** Contact metamorphism. **Topic 6.** Regional metamorphism. **Topic 7.** Granulite facies. **Topic 8.** Eclogite facies. **Topic 9.** Metamorphism and crustal evolution.

**The petrographic microscope (36 hours): Topic 1.** Properties of the minerals: form, colour, relief, Becke line method, pleochroism, optical sign, interference colours, 2V. **Topic 2.** Identification of minerals in magmatic and metamorphic rocks: quartz, feldspars, plagioclase, olivine, pyroxenes, amphiboles, micas, chlorite, opaque minerals, apatite, zircon, titanite, rutile, epidote, serpentine, carbonate minerals, spinels, garnets, prhenite, pumpellyite. **Topic 3.** Identification of magmatic rocks in thin section. **Topic 4.** Identification of metamorphic rocks in thin section.

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**TEACHING METHODS**

Theoretical lessons, Laboratory tutorials, Field trip.

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**EVALUATION METHODS**

Report of two rock samples in thin section with an optical microscope and oral examination.

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**TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL**

Notes provided by the teacher at the end of each argument

- D'Amico C., Innocenti F. & Sassi F.P. – Magmatismo e Metamorfismo – UTET, Torino, 1987.
- Morbidelli L. – Le rocce e i loro costituenti. BARDI EDITORE, 2003
- Wilson B.M. – Igneous Petrogenesis. Chapman Hall, London, 1986.
- Deer W.A., Howie R.A., Zussman J. – Introduzione ai minerali che costituiscono le rocce. Zanichelli, 1994.
- Mackenzie W.S., Donaldson C.H., Guilford C. – Atlante delle rocce magmatiche e delle loro tessiture.

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Zanichelli

- Peccerillo A., Perugini D. – Introduzione alla Petrografia ottica. Morlacchi, 2003.
- Yardley B.W.D., Mackenzie W.S., Guilford C. - Atlante delle rocce metamorfiche e delle loro microstrutture. Zanichelli
- Zezza U. – Petrografia microscopica. La Goliardica Pavese,1996.

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**INTERACTION WITH STUDENTS**

Meet with students: Mondays from 17-18 hours; Tuesday from 17-18 hours; Wednesday from 17-19 hours; Thursday from 16-18 hours. In addition the teacher is available for a contact with the students, through their email.

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**EXAMINATION SESSIONS (FORECAST)<sup>1</sup>**

26/07/2017; 27/09/2017; 25/10/2017; 29/11/2017; 12/12/2017

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**SEMINARS BY EXTERNAL EXPERTS**      YES

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**FURTHER INFORMATION**

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