



UNIVERSITÀ DI PISA FUNDAMENTALS OF GEOLOGY

CHIARA FRASSI

Anno accademico	2019/20
CdS	APPLIED AND EXPLORATION GEOPHYSICS
Codice	206DD
CFU	6

Moduli	Settore/i	Tipo	Ore	Docente/i
FUNDAMENTALS OF GEOLOGY	GEO/03	LEZIONI	48	CHIARA FRASSI

Learning outcomes

Knowledge

The student who successfully completes the course will have acquired basic knowledge in geology, stratigraphy and tectonics. In addition, he/she will be able to macroscopically describe and classify the most common igneous, sedimentary and metamorphic rocks.

Assessment criteria of knowledge

The student will be assessed on his/her demonstrated ability to discuss the main course contents using the appropriate terminology.
Methods:

- Final oral exam

Skills

The student who successfully completes the course will be able to describe and analyse a rock successions, to classify the lithogenic processes and to recognise the sedimentary environments. He/she will be also able to understand the main geodynamic processes active on the different plate margins and tectonic structures and deformation mechanisms that regulate the geological evolution of the earth's crust.

Assessment criteria of skills

The assessment criteria of skills will be carried out during the final oral examination.

Behaviors

The capacity to conduit a structural and stratigraphical analysis will be acquired.

Teaching methods

Delivery: face to face

Learning activities:

- attending lectures
- individual study

Attendance: Advised

Teaching methods:

- Lectures

Syllabus

Structure and physical properties of the Earth. Plate tectonics: divergent, transform and convergent margins. Characteristics of plate boundaries. The rocks cycle. Igneous, sedimentary and metamorphic rocks. Magmatic activity, global distribution of volcanism and plate tectonics. The sedimentary cycle, sedimentary structures and depositional environments. The principles of actualism, the principle of original horizontality and the Walther's Rule. Stratigraphic units. Stratigraphic contacts. Finite deformation at the mesoscopic scale and rheological behaviour. Brittle and ductile deformation: faults and folds. Thrust systems, deformation mechanisms (fault propagation fold, fault-bend folding) and inversion tectonics. Collisions and orogenic belts, the thrust and folds belt.



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Bibliography

- Bosellini A. (I ed.1984; IV ed. 1986 IV) - Le scienze della Terra. Bovolenta (Zanichelli). ISBN 88-08-04150-6
- D'Argenio B., Innocenti F., Sassi F.P. (1994) - Introduzione allo studio delle rocce. UTET, 162 pp. ISBN 88-02-04870-3
- Kearey P., Vine F.J. - Tettonica Globale, Zanichelli, Bologna
- Skinner B.J., Porter S.C. (1989) - The dynamic Earth. John Wiley & Sons. ISBN 0-471-53131-6
- Gill R. (1989, II ed. 1996) - Chemical fundamentals of Geology. Chapman & Hall, 298 pp. ISBN 0-412-54930 1 (Capp 5, 6, 7, 8,9, 10)
- Gottardi, G. (1978) - I minerali. Boringhieri, 296 pp.
- Mottana A., Crespi R., Liborio G. (1977, V ed. 1985) - Minerali e rocce. Mondadori, 608 pp.
- <http://pubs.usgs.gov/publications/text/dynamic.html>
- www.geology.com

Non-attending students info

The frequency of the lessons is not mandatory.

Assessment methods

Oral exam

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