

COURSE: *SEDIMENTOLOGY*

ACADEMIC YEAR: *2016-2017*

TYPE OF EDUCATIONAL ACTIVITY: (Basic, Characterizing, Affine, Free choice, Other): *Free Choice*

TEACHER: *Dott. Sergio Longhitano*

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Language: *English*

ECTS: (lessons e tutorials/practice) *6*
(*4 of lectures and 2 of lab activities*)

n. of hours: (lessons e tutorials/practice) *56*
(*32 of lectures and 24 of lab activities*)

Campus: *Potenza*
Dept./School: *Department of Sciences*
Program: *Scienze Geologiche (L34)*

Semester: *winter*
03/10/2016, 15-31/01/2017

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

Each student will learn about the basic criteria to recognize the main type of sediments and sedimentary rocks, their systematic description and classification based on the observation of their physical features. The class also provides practical experience on the acquisition of sedimentological data from outcrop sedimentary successions and well core datasets. The course finally illustrates the main types of sedimentary processes, environments and depositional systems and the main aspects concerning the application of Sedimentology on the reservoir characterizations, withdrawal of clastic sediment for industrial purposes and maintenance of clastic littorals.

PRE-REQUIREMENTS

SYLLABUS

1. Introduction to the Course

1a. Basic notions on clastic and non-clastic sediments; 1b. textural features of terrigenous, carbonated and mixed sediments; 1c. Processes of erosion, transport and sedimentation; 1d. Main types of sediments and sedimentary rocks; 1e. sedimentary basins.

2. Concept of Sedimentary Facies

2a. Meaning and interpretation of sedimentary facies; 2b. Facies successions; 2c. Depositional environments; 2d. Depositional systems.

3. Principles of Hydrodynamics

3a. Hydrostatic and hydrodynamic conditions of a flow; 3b. the Reynold number: laminar and turbulent flows; 3c. the Bagnold equation; 3d. concept of strata bound.

4. Sedimentary structures in clastic sediments.

4a. Tractional structures; 4b. erosive; 4c. deformative. 4d. un common sedimentary structures.

5. Strata and stratification

5a. Concep of strata and main stratal geometries; 5b. Concept of Stratification; 5c. strata successions. 5d. Key-strata or key-beds; 5e. stratigraphic correlations.

6. stratigraphic surfaces

6a. stratigrafic continuità or conformity; 6b. Discontinuity; 6c. Paraconformity. 6d. Unconformity. 6e. Time-transgressive surfaces.

7. Depositional systems

7a. continental systems (colluvial and alluvial fans; fluvial systems; lacustrine systems); 7b. ransitional systemsi (deltas and coastlines); 7c. marine systems (shelf, slope and deep-basin); 7d. carbonate systems.

8. Laboratory practice: acquisition of sedimentological data

8a. Logging on outcrop sections and well cores; 8b. Grain size analyses; 8c. Thin section analyses.

9. Field trips

9a. Examples of continental successions, terrigenous in marginal-marine and deeper settings; 9b. carbonate successions from shallow to deep-marine settings; 9c. mixed successions.

TEACHING METHODS

Frontal lessons, seminars, video projections, field, laboratory and computer exercises

EVALUATION METHODS

Written/practice and oral exams

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

- *F. Ricci Lucchi (1980). Sedimentologia (i, II e III parte). Clueb*

J. Southard (2007). Lectures of Sedimentology.

INTERACTION WITH STUDENTS

Chat and public meetings planned based on e-mail or phone contacts

EXAMINATION SESSIONS (FORECAST)¹

Wednesday, February 15th 2017

Wednesday, March 15th 2017

Wednesday, April 12th 2017

Wednesday, May 17th 2017

Wednesday, June 14th 2017

Wednesday, July 12th 2017

Wednesday, September 13th 2017

Wednesday, October 18th 2017

Wednesday, November 15th 2017

Wednesday, December 13th 2017

SEMINARS BY EXTERNAL EXPERTS

YES NO

FURTHER INFORMATION

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