



# UNIVERSITÀ DEGLI STUDI DI PALERMO

<b>DEPARTMENT</b>	Scienze della Terra e del Mare		
<b>ACADEMIC YEAR</b>	2016/2017		
<b>BACHELOR'S DEGREE (BSC)</b>	GEOLOGY		
<b>INTEGRATED COURSE</b>	ELEMENTS OF SEDIMENTARY SEDIMENTOLOGY AND PETROGRAPHY		
<b>CODE</b>	17521		
<b>MODULES</b>	Yes		
<b>NUMBER OF MODULES</b>	2		
<b>SCIENTIFIC SECTOR(S)</b>	GEO/02, GEO/07		
<b>HEAD PROFESSOR(S)</b>	AGATE MAURO	Professore Associato	Univ. di PALERMO
<b>OTHER PROFESSOR(S)</b>	AGATE MAURO	Professore Associato	Univ. di PALERMO
	SCOPELLITI GIOVANNA	Professore Associato	Univ. di PALERMO
<b>CREDITS</b>	6		
<b>PROPAEDEUTICAL SUBJECTS</b>			
<b>MUTUALIZATION</b>			
<b>YEAR</b>	3		
<b>TERM (SEMESTER)</b>	2° semester		
<b>ATTENDANCE</b>	Not mandatory		
<b>EVALUATION</b>	Out of 30		
<b>TEACHER OFFICE HOURS</b>	<b>AGATE MAURO</b>		
	Monday	12:30 14:00	studio del docente, stanza n°3 al terzo piano del Dip. di Scienze della Terra e del Mare, via Archirafi 20
	Friday	12:30 14:00	studio del docente, stanza n°3 al terzo piano del Dip. di Scienze della Terra e del Mare, via Archirafi 20
	<b>SCOPELLITI GIOVANNA</b>		
	Tuesday	15:00 16:00	Via Archirafi 36, II piano, stanza II-4

<b>PREREQUISITES</b>	General knowledge of lithology, mineralogy, petrography and stratigraphy
<b>LEARNING OUTCOMES</b>	<p>Knowledge of different types of sediments and the processes that control their formation, transport, accumulation and transformation into sedimentary rocks. Knowing the compositional, textural and structural properties and learning criteria to achieve a quick recognition on the field. Knowing the main classifications of sediments and sedimentary rocks. Understanding what properties are to be observed and analyzed to describe, identify and classify sediments and sedimentary rocks.</p> <p>Ability to recognize and classify samples of sediments and sedimentary rocks by describing the compositional and textural properties. Knowing how to reconstruct: - the transport processes through the observation of the sedimentary structures; - the depositional environment of a sedimentary rock starting from its macroscopic features. Ability to bind within a single unified framework the information gained from the study of the sedimentological and petrographic properties of a sedimentary rock with the natural processes that the rock may have undergone.</p> <p>To be autonomous in selecting the more suitable methods of compositional and structural analysis to use for characterization of sediments and sedimentary rocks. Ability to evaluate the results obtained from a petrographic study in terms of implications related to the mineral constituents of the rock and its history also in relation to specific geological applications.</p> <p>Ability to illustrate the properties of sediments and sedimentary rocks, the characters of the sedimentary environment and any implications for the purpose of specific applications to specialists of the discipline but also to a non-expert public. Ability to use a specific sedimentological and petrographic language. Knowing how to communicate with colleagues or clients the results of their own analyses, in a clear and unambiguous way, also by using appropriate IT tools for data presentation.</p> <p>Ability to independently implement their knowledge, by consulting manuals and scientific papers, or through participation in initiatives of "continuous professional development". To lay basis for: - enabling students to face new fields of study; - successfully to participate in further learning pathways (eg. Master and graduate schools).</p>
<b>ASSESSMENT METHODS</b>	<p>Oral exam concerning: 1) macroscopic identification of 1 sedimentary rock and 1 sedimentary structure; 2) discussion on the topics developed during the class by a minimum of 3 open questions aimed to verify: (i) the correct use of scientific-technical language; (ii) the ability to develop an autonomous and critical thinking; (iii) the conceptual connection among the different studied topics. The minimum requirements for passing the exam are: (i) identification of the rock; (ii) sufficient knowledge of the petrogenesis of the sedimentary rock and acceptable ability to link the studied topics.</p>
<b>TEACHING METHODS</b>	classroom lessons also with analysis of samples of sediments and rocks

## MODULE SEDIMENTOLOGY

*Prof. MAURO AGATE*

### SUGGESTED BIBLIOGRAPHY

A. Bosellini, M. Mutti & F. Ricci Lucchi: "Rocce e successioni sedimentarie" – UTET  
 F. Ricci Lucchi: "Sedimentologia" – CLUE  
 F. Ricci Lucchi: "Atlante di sedimentografia" – ZANICHELLI  
 J.R.L. Allen: "Physical processes of sedimentation". Unwin Univ. Books, London.  
 H. G. Reading (Ed.): "Sedimentary Environments and Facies" – BLACKWELL SCIENTIFIC PUBLICATIONS  
 Davies & Fitzgerald: "Beachs and Coasts". Springer

<b>AMBIT</b>	10707-Attività formative affini o integrative
<b>INDIVIDUAL STUDY (Hrs)</b>	51
<b>COURSE ACTIVITY (Hrs)</b>	24

### EDUCATIONAL OBJECTIVES OF THE MODULE

The main aim of the module is to illustrate an overview of active sedimentary processes on the earth's surface and on the seafloor. It will be illustrated: chemical, physical and biological processes that govern the formation of the various types of sediments, the different types of sediment transport, the mechanisms of accumulation and diagenesis. The students must be able to recognize and classify various types of sedimentary structures and to identify the process which gave rise them. It will be also illustrated general features about the sedimentary environments, especially on the coastal belt, and the economic relevance of certain types of sediments and sedimentary rocks.

## SYLLABUS

Hrs	Frontal teaching
8	Transport and depositional processes of terrigenous sediments: laminar and turbulent fluxes; selective processes, massive processes gravitational and non; turbidity current
6	The criteria for recognizing the transport processes and the accumulation mechanisms: analysis of sedimentary structures associated with siliciclastic sediments; sedimentary structures of not depositional origin
2	General properties and physical-chemical parameters of sedimentary environments
8	Compositional, textural and structural properties of sediments that accumulate in terrigenous sedimentary environments: fluvial, lacustrine, glacial, aeolic, eluvial, coastal, shallow and deep sea sediments

**MODULE  
SEDIMENTARY PETROGRAPHY**

*Prof.ssa GIOVANNA SCOPELLITI*

**SUGGESTED BIBLIOGRAPHY**

Tucker M.E. - Geologia del sedimentario. Dario Flaccovio Editore.  
Tucker M.E. - Rocce sedimentarie. Guida alla descrizione sugli affioramenti rocciosi. Dario Flaccovio Editore.  
Adams A.E., MacKenzie W.S., Guilford C. - Atlante delle rocce sedimentarie al Microscopio. Zanichelli.  
Adams A.E., MacKenzie W.S. - Carbonate sediments and rocks under the microscope.

<b>AMBIT</b>	10707-Attività formative affini o integrative
<b>INDIVIDUAL STUDY (Hrs)</b>	51
<b>COURSE ACTIVITY (Hrs)</b>	24

**EDUCATIONAL OBJECTIVES OF THE MODULE**

The aim of the course is to give students a wide overview of the sedimentary rocks very important for a geologist due the abundance of this kind of rocks on Earth surface. During the course will be supply the instruments to describe and classify a sedimentary rock and to reconstruct the petrogenetic environment. To this purpose will be illustrated the macro and micro textural features and the chemical-mineralogical aspects with the aim to define the main processes involved during their history.

**SYLLABUS**

<b>Hrs</b>	<b>Frontal teaching</b>
3	Classification, composition and texture of the sedimentary rocks; sedimentary environments; hints on the study methods and analytical approach.
2	Soils and residual rocks: chemical features of the formation environment and of the involved substances, classification.
3	Clastic rocks as instrument for palaeoenvironmental reconstructions and in the evaluation of the anthropogenic impact in recent sediments.
3	Organic and oil-source rocks: characterization, petrogenesis and economic importance.
2	Organogenic rocks: diatomites, radiolarites, bioclastic arenites.
3	Chemical rocks: evaporites and travertine.
4	Stromatolites and condensed levels: composition and formation environments, bacterial mediation processes, linkage with study on the life out the Earth.
4	Textural features under the polarized light microscope of the main sedimentary rocks.