



UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Scienze della Terra e del Mare		
ACADEMIC YEAR	2016/2017		
MASTER'S DEGREE (MSC)	GEOLOGICAL SCIENCES AND TECHNOLOGIES		
SUBJECT	VOLCANIC PETROLOGY		
TYPE OF EDUCATIONAL ACTIVITY	B		
AMBIT	50569-Discipline mineralogiche, petrografiche e geochemiche		
CODE	16481		
SCIENTIFIC SECTOR(S)	GEO/07		
HEAD PROFESSOR(S)	ROTOLO SILVIO	Professore Ordinario	Univ. di PALERMO
	GIUSEPPE		
OTHER PROFESSOR(S)			
CREDITS	6		
INDIVIDUAL STUDY (Hrs)	86		
COURSE ACTIVITY (Hrs)	64		
PROPAEDEUTICAL SUBJECTS			
MUTUALIZATION			
YEAR	2		
TERM (SEMESTER)	1° semester		
ATTENDANCE	Not mandatory		
EVALUATION	Out of 30		
TEACHER OFFICE HOURS	ROTOLO SILVIO GIUSEPPE Wednesday 12:30 14:30 Studio Prof. Rotolo Thursday 12:30 14:30 Studio Prof Rotolo		

DOCENTE: Prof. SILVIO GIUSEPPE ROTOLO

PREREQUISITES	good petrographic background
LEARNING OUTCOMES	<p>1) KNOWLEDGE AND UNDERSTANDING acquisition of necessary knowledge of geochemistry and petrology to develop an integrated view of magmatic rocks.</p> <p>2) APPLYING KNOWLEDGE AND UNDERSTANDING. integrated perspective (observatio-theory-eruptive scenario) for understanding petrology of volcanism either in the field or in lessons.</p> <p>3) MAKING JUDGEMENTS Critical perspective and adoption of technical language.</p> <p>4) COMMUNICATION SKILLS ability to explain geological implications and the connection between observations (micro and macroscopic) even to an audience without geological background.</p> <p>5) LEARNING SKILLS ability to link in an unique mainframe theory, technology and practice</p>
ASSESSMENT METHODS	<p>- "in itinere" examination regarding the first part of the course. Will be positively evaluated the ability to link arguments in a common mainframe.</p> <p>- final examination regarding the field campaign, related geological map and geological report. Will be positively evaluated the ability to link field data with the eruptive scenario.</p> <p>The minimum for the successful examination is: knowledge of the general outlines of the arguments of the course, and their interconnection. The higher the degree of interaction and fluidity of linkages among the arguments of the course, the increasingly higher positive evaluation.</p>
EDUCATIONAL OBJECTIVES	<p>The principal educational aims of the course are:</p> <p>1) acquisition of an integrated vision of magmatic rocks, using the methods of geochemistry, experimental petrology, volcanology.</p> <p>2) Development of adequate field skill necessary to transalte the field successions in an eruptive scenario</p>
TEACHING METHODS	frontal lessons, field campaign
SUGGESTED BIBLIOGRAPHY	Appunti di lezione e file pdf delle lezioni forniti dal docente on line

SYLLABUS

Hrs	Frontal teaching
4	Upper and lower mantle. Petrological and geochemical aspects. Experimental petrology in ultramafic systems (piston-cylinder, Multi anvil, DAC). How to plan and execute an experiment. Study of peridotites and other mafic rocks in thin section
2	Structure of silicate melts NBO/T ratio. Influence of cationic species. Primary and derivative magmas.
6	Volatiles in magmas. Solubility models for H ₂ O and CO ₂ . The study of melt inclusions, theory and practice. FT-IR spectroscopy: theory and practical applications.
2	Review of trace elements and their application in petrogenetic models or characterization of magma sources.
4	Some applications of Rb/Sr, Sm/Nd, U/Pb isotopic systems and their applications in the geochemistry of the mantle. The isotopic mantel components (DM, EMI, EMII, HIMU).
4	The H ₂ O transport in the deep mantle. Nominally anhydrous minerals. Implications for subduction zone magmatism
10	Petrology and volcanological evolution of Aeolian islands, Stromboli Mt. Etna and Pantelleria. Experimental petrology applied to the determination of magma pre-eruptive conditions at Etna and Pantelleria.
Hrs	Others
32	Five-days field work at Pantelleria island. Production of a geological map 1: 10 000, stratigraphy, stratigraphic correlations, considerations upon eruptive scenarios.