



# UNIVERSITÀ DEGLI STUDI DI PALERMO

<b>SCHOOL</b>	POLYTECHNIC SCHOOL		
<b>ACADEMIC YEAR</b>	2016/2017		
<b>FIRST CYCLE COURSE</b>	CIVIL AND BUILDING ENGINEERING		
<b>SUBJECT</b>	APPLIED GEOLOGY		
<b>TYPE OF EDUCATIONAL ACTIVITY</b>	C		
<b>AMBIT</b>	10653-Attività formative affini o integrative		
<b>CODE</b>	03657		
<b>SCIENTIFIC SECTOR(S)</b>	GEO/05		
<b>HEAD PROFESSOR(S)</b>	ERCOLI LAURA	Ricercatore	Univ. di PALERMO
<b>OTHER PROFESSOR(S)</b>			
<b>CREDITS</b>	6		
<b>INDIVIDUAL STUDY (Hrs)</b>	96		
<b>COURSE ACTIVITY (Hrs)</b>	54		
<b>PROPAEDEUTICAL SUBJECTS</b>			
<b>YEAR</b>	1		
<b>TERM (SEMESTER)</b>	2° semester		
<b>ATTENDANCE</b>	Not mandatory		
<b>EVALUATION</b>	Out of 30		
<b>TEACHER OFFICE HOURS</b>	<b>ERCOLI LAURA</b> Tuesday 12:30 13:30 da concordare via e-mail entro il giovedì precedente all'indirizzo <a href="mailto:laura.ercoli@unipa.it">laura.ercoli@unipa.it</a>		

<p><b>TEACHING METHODS</b></p>	<p>lectures,exercitations , 1 field survey</p>
<p><b>ASSESSMENT METHODS</b></p>	<p>The marks are expressed in thirtieths. The examination consist in a written test and an oral test. The written test is the construction of a geological section . The written examination is passed if the student reaches at least a value of 4/8.The oral test consist in at least two questions about arguments of the programme of the module of engineering Geology.</p> <p>The examination is passed whenever the student has demonstrated knowledge and understanding of the topics of the programme of the course of Engineering geology, that is the student:</p> <ul style="list-style-type: none"> <li>• demonstrate knowledge and understanding the internal and surface processes that control geological evolution;</li> <li>• describe and classify common minerals and igneous, metamorphic and sedimentary rocks and demonstrate an understanding of how they form;</li> <li>• describe and classify geological structures and demonstrate an understanding of how they are formed;</li> <li>• demonstrate knowledge and understanding of basic stratigraphical principles and geological histories and methods for determining the sequence of geological events</li> <li>• recognise the outcrop patterns produced on geological maps by horizontal and inclined strata and simple examples of fin the undergroundolds and faults, recognise how the geological formation are setted</li> <li>• synthesize data from different scales (microscopic to planetary) and disciplines into simple, but coherent, models of the geological processes and geomorphological evolution;</li> <li>• demonstrate knowledge and understanding of the applied significance of geology in relation to the occurrence of natural resources and natural hazards, and the environmental impact of anthropic actions.</li> </ul> <p>The examination is passed with full marks whenever the student can apply his own knowledge and understanding of geoenvironment in a manner that indicates a brilliant approach to the problems and has competences typically demonstrated through devising and sustaining arguments and solving problems; he reached the ability to gather and interpret relevant data to inform judgements on relevant aspect of a geological environment; he has developed those learning skills that are necessary for him to continue to undertake further knowledges with a high degree of autonomy and finally he can communicate with a proper language information, ideas, problems and solutions to both specialist and non-specialist audiences. The student demostrates to work within an appropriate ethos</p>
<p><b>LEARNING OUTCOMES</b></p>	<p>Knowledge The student is capable of critical analysis, evaluation and synthesis of new and complex geological context</p> <p>Comprehension The student has demonstrated the ability to conceive, implement and adapt the geologic knowledges and the techniques of geologic surveying to specific design problems</p> <p>Autonomy in Judgement The student can apply his knowledge and understanding, and problem solving abilities in new or unfamiliar environments within multidisciplinary contexts related to their field of study;</p> <ul style="list-style-type: none"> <li>• The student has the ability to integrate knowledge and handle complexity, and formulate judgements with the available data to examine the geological contest and to individuate the specific issues and the interdependence between different environmental factors.</li> <li>•</li> </ul> <p>Ability to communicate The student can communicate the results of the study and can ask appropriate questions to specialist audiences clearly and unambiguously and can fully comprise their answers and he can interact with his own ideas, problems and solutions with a multidisciplinary team of specialist</p> <p>Ability of learning The student has developed those learning skills that are necessary for him to continue to undertake further study with a high degree of autonomy.</p>
<p><b>EDUCATIONAL OBJECTIVES</b></p>	<p>This module provides a concise overview of what geology involves, including its practical applications in civil engineering. In lectures students will learn about minerals and the principal rock types and how they form and how lithology, tectonics and climate action control many processes and geomorphological features. Aim of the module of Engineering geology is to furnish the teorical knowledges and the methods that are necessary to interpret and to understand the geological context and the critical evaluation of the results of geological study and survey that support civil engineering design and works.</p>

<b>PREREQUISITES</b>	basic knowledges of chemical and of geography
<b>SUGGESTED BIBLIOGRAPHY</b>	<ul style="list-style-type: none"> <li>• Ercoli L., Dispense del corso di Geologia Applicata</li> <li>• Ercoli L., Slides del corso di Geologia Applicata e delle esercitazioni</li> </ul> <p>Testi consultabili presso le biblioteche di Ateneo</p> <ul style="list-style-type: none"> <li>• Sappa G., Geologia Applicata ed. Cittastudi</li> <li>• Simpson B., Lettura ed interpretazione delle carte geologiche, Dario Flaccovio ed.</li> <li>• Mottana A., Crespi., Liborio G., Minerali e rocce, Mondadori ed.</li> <li>• Aruta I., Marescalchi P., Cartografia, Dario Flaccovio ed.</li> <li>• I.G.M. Tavole 1:25000</li> <li>• Servizio Geologico d'Italia Carte geologiche 1:100.000</li> <li>• Freeze R.A., Cherry J.A. Groundwater, ed. Prentice hall</li> <li>• Chiesa G., Inquinamento delle acque sotterranee, ed. Hoepli</li> <li>• Castiglioni G.B. Geomorfologia ed. UTET</li> <li>• Gisotti G. Geopedologia ed. Calderini</li> <li>• Ippolito ed alii, Geologia tecnica ed. ISEDI</li> <li>• Assessorato Territorio Ambiente Regione Sicilia Il piano per l'assetto idrogeologico</li> <li>• Assessorato Territorio Ambiente Regione Sicilia Circolare 2222</li> </ul>

## SYLLABUS

Hrs	Frontal teaching
1	introduction to the module
2	Earth structure.plate tectonic, lithogenetic cycle
7	minerals and rocks, igneous rock and their structures, metamorphic rocks and their structures, sedimentary rocks and depositional environments
5	Elements of Stratigraphy: 1 principles and sedimentary structures ; 2 stratification and bedforms 2 stratigraphic relations Elements
5	Elements of tectonic: faults, folds , thrust nappes
6	Elements of geomorphology: weathering and erosion , Landform evolution: structural surfaces, Mass Movements, Fluvial processes, Coastal processes
2	Interpretation of Topographic maps, 1 thematic maps
3	geologic maps and sections
6	Elements of Hydrogeology Drainage patterns, groundwater and hydraulic properties of rocks , aquifers, aquitards and aquicludes, classification of springs, hydrogeological maps
5	Geological hazard: 1 Hazard, Risk and Vulnerability, 1 Prevention and Mitigation of Geological Hazards 1 Hazard and Risk Maps, 2 The P.A.I. of the Sicily region 2
2	field and laboratory investigation
Hrs	Practice
2	Key system for identification and classification of hand specimens of rock
2	interpretation of of sequencies geological events Elements
2	description of landform from a topographic map
4	construction of geologic sections, 2 construction of an erodibility map
3	costruction of a hydrogeologic map, 1 individuation of groundwater structures