

1. GENERAL INFORMATION

Study programme title	Undergraduate Study of Geological Engineering			27206	
Course title	Engineering Geology I		Semester	Summer	
Teacher	Assistant Professor Martin Krkač, PhD		Course code		
Course type	<input checked="" type="checkbox"/> obligatory <input type="checkbox"/> elective		ECTS	4	
Location	Faculty of Mining, Geology and Petroleum Engineering, Pierottijeva 6, Zagreb				
Language	<input checked="" type="checkbox"/> Croatian <input checked="" type="checkbox"/> English				
Class type	Weekly hours	Teaching staff	Office hours	Room	E-mail
Class	2	Assistant Professor Martin Krkač, PhD	Wednesday 10-12 h	411	mkrkac@rgn.hr
Practice	1	Assistant Marin Sečanj, mag.ing.geol.	Wednesday 10-12 h	411	msecanj@rgn.hr
Field lecture	1 day	Assistant Professor Martin Krkač, PhD Assistant Marin Sečanj, mag.ing.geol.			
E-learning level	1	Percentage of on-line class (max. 20%)		5%	

2. COURSE DESCRIPTION

Course aims	<p>Aims of course are to define and explain:</p> <ol style="list-style-type: none"> 1. Engineering Geology and Geotechnical Engineering, their relationship with other similar disciplines 2. physical and mechanical properties of rock and soils and their influence on the rock and soil behaviour
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	<p>3. methods for investigations of rock and soil physical and mechanical properties</p> <p>4. geomechanical soil classification</p> <p>5. rock mass classification</p> <p>5. properties of rock discontinuities and influence on rock mass behaviour</p> <p>6. influence of water on the rock and soil behaviour</p> <p>7. geological processes important for engineering and their influence on geotechnical and mining design</p> <p>8. engineering geological investigations for different engineering problems</p>
<p>Requirements for applicants</p>	<p>Students need to understand basic geological themes related to Mineralogy, Petrology, Sedimentology and Structural Geology</p>
<p>Programme level learning outcomes with course contribution</p>	
<p>Expected course level learning outcomes (4-10 outcomes)</p>	<p>After the course, student should be able to:</p> <ol style="list-style-type: none"> 1. define terms Engineering Geology and Geotechnical Engineering, so as, to describe relations with other similar disciplines 2. define physical and mechanical properties of rock and soils, so as to understand influence of physical and mechanical properties on the rock and soil engineering behaviour 3. list and describe methods for investigations of rock and soil physical and mechanical properties 4. apply geomechanical soil classification on the results of laboratory tests 5. list and define properties of rock discontinuities and list criteria for rock mass classifications 6. define and describe influence of water on the behaviour of rock and soil

	<p>7. list and describe geological processes important for engineering and explain their influence on geotechnical and mining design</p> <p>8. list and describe methods for engineering geological investigations, for different engineering problems</p>
Course contents by individual lessons	
Class	Practice
Introduction to Engineering Geology	Introduction
Basic of Mechanical engineering (stress and strength)	Mohr circles and Mohr-Coulomb failure criteria
Physical properties of soils	Grain size distribution and classification of soils (USCS)
Mechanical properties of soils	Grain size distribution and classification of soils (ESCS)
Physical and Mechanical properties of intact rock	Plasticity chart
Rock mass properties	Stress and strain of rock
Rock mass properties	Colloquium
Rock mass classification	RQD
Weathering of rocks	Engineering geological rock (mass) description
Water in Geotechnical Engineering	Rock Mass classification (RMR)
Geomorphological processes (landslides)	Rock Mass classification (GSI)
Geomorphological processes (erosion) / earthquakes	Graphical stability analyses
Engineering geological investigations	Graphical stability analyses
Engineering geological investigations	Colloquium
Field exercises	
Students' obligations	<p>Obligations</p> <p>Regular presence at the class (maximum absence 3 + 1) and positively solved practical tasks.</p>



Students' work track <i>(indicate share in ECTS points for each activity so that overall ECTS number corresponds to class credits score):</i>	Class attendance	1	Research	
	Project		Report	
	Colloquium	2	Seminar paper	
	Practical work		Oral exam	1
	Written exam		(Extra)	
Type of exam, grades and evaluation of students work during class and on final exam	Evaluation of student arises form two colloquium grades, practical task grades, eventually written exam, and oral exam.			
Mandatory literature (available in the Library and via other media)				
Additional literature (at the moment of study program proposition application)	De Freitas, M.H. (2009): Engineering Geology. Principles and Practice. Springer, 450 p. De Vallejo, L.G., Ferrer, M., de Freitas, M. (2011): Geological Engineering. CRC Press, 700 p. Johnson & DeGraff (1988): Principles of Engineering Geology. Wiley, 512 p. Waltham, T. (2009): Foundations of Engineering Geology. 3rd Ed. Taylor & Francis, New York, 104 p.			
Examination terms	Every second Thursday within exam-terms.			
Other				