COURSE DESCRIPTION CARD

<table>
<tr><td colspan="10">Faculty of Civil Engineering and Environmental Sciences</td></tr>
<tr><td>Field of study</td><td colspan="5"></td><td colspan="2">Degree level and programme type</td><td colspan="2">BSc.</td></tr>
<tr><td>Specialization/ diploma path</td><td colspan="5"></td><td colspan="2">Study profile</td><td colspan="2">academic profile</td></tr>
<tr><td rowspan="2">Course name</td><td colspan="5" rowspan="2">Engineering geology and petrography</td><td colspan="2">Course code</td><td colspan="2">IS-FCEE-00150S</td></tr>
<tr><td colspan="2">Course type</td><td colspan="2">Erasmus</td></tr>
<tr><td rowspan="2">Forms and number of hours of tuition</td><td>L</td><td>C</td><td>LC</td><td>P</td><td>SW</td><td>FW</td><td>S</td><td>Semester</td><td>Summer</td></tr>
<tr><td>30</td><td></td><td></td><td></td><td>15</td><td></td><td></td><td>No. of ECTS credits</td><td>3</td></tr>
<tr><td>Entry requirements</td><td colspan="9">does not concern</td></tr>
<tr><td>Course objectives</td><td colspan="9">The aim of the course is to teach students the necessary knowledge of geology and geomorphology, including the presentation of various geological processes that shape the terrain and affect its properties relevant to civil engineers. The course also aims to teach students practical recognition of rocks and basic information about rocks and their origins.</td></tr>
<tr><td>Course content</td><td colspan="9">Lecture: The importance of geology in construction issues. Earth's interior. Earthquakes. The impacts of earthquakes, minimizing damage and casualties. Fundamentals of plate tectonics. Mountain building. Volcanoes and other igneous activity (types of volcanoes, volcanic hazards, intrusive igneous bodies). Extrusive and intrusive igneous rocks. Metamorphism and metamorphic rocks. Weathering and soil (mechanical weathering, chemical weathering, the products of weathering and erosion). Mass wasting (classification of mass wasting, preventing, delaying, monitoring, and mitigating mass wasting). Stream erosion and deposition. Glaciation (glaciers, glacial erosion, glacial deposition). Deserts and wind. Sediments and sedimentary rocks (clastic, chemical and organic sedimentary rocks). Geological structures (folding, fracturing and faulting). Groundwater (aquifers, groundwater flow, groundwater quality). Shorelines (coastal erosion and coastal deposition).
Specialized workshop: Basic terms related to crystallography, mineralogy and petrography. Mineral properties - practical recognition. Mohs scale. The common rock-forming minerals. Rock, the rock cycle, classification of rocks. Minerals of igneous rocks, macroscopic recognition. Igneous rocks (extrusive and intrusive igneous rocks), mineral composition, classification, recognition. Minerals in the sedimentary cover. Sediments and sedimentary rocks (clastic, chemical and organic sedimentary rocks). Carbonate rocks. Metamorphic minerals and rocks. Industrial uses of rocks.</td></tr>
<tr><td>Teaching methods</td><td colspan="9">Informative lecture, specialization workshop.</td></tr>
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Assessment method	Lecture: final test Specialization workshop: written test (rock and mineral recognizing).	
Symbol of learning outcome	**Learning outcomes**	**Reference to the learning outcomes for the field of study**
LO1	Student has knowledge of rocks and processes leading to rocks transformation, knows their genesis.	K_B1_W01
LO2	Student is able to describe the geological processes that formed the area and which affect its properties.	K_B1_W01, K_B1_U01
LO3	Student is able to use his knowledge to better understand issues of building materials, soil mechanics and foundation.	K_B1_W01
LO4	Student is ready to find the relationship between geology and engineering object.	K_B1_K01
LO5	Student can recognize rocks and minerals.	K_B1_U01 K_B1_U05
LO6	Student knows the basic terms in the field of stratigraphy and lithology.	K_B1_W01
LO7	Student is ready to critically assess the knowledge, use expert opinions and the need for continuous deepening of knowledge in the field of engineering geology.	K_B1_U12 K_B1_K01 K_B1_K02 K_B1_K06
Symbol of learning outcome	**Methods of assessing the learning outcomes**	**Type of tuition during which the outcome is assessed**
LO1	final test, written test	L, SW
LO2	final test	L
LO3	final test, written test	L, SW
LO4	final test	L
LO5	written test	SW
LO6	final test	L
LO7	written test	SW
Student workload (in hours)		**No. of hours**
Calculation	participation in lectures	30
	participation in specialization workshop	15
	preparation for specialization workshop	15
	participation in consultations for specialization workshop	5
	preparation for passing the lecture	5
	preparation for passing the specialization workshop	5
	TOTAL:	**75**
Quantitative indicators	**HOURS**	**No. of ECTS credits**
Student workload – activities that require direct teacher participation	50 h	2,0
Student workload – practical activities	45 h	1,8

Basic references	Blyth F., Freitas M., 1984. A Geology for Engineers. CRC Press Bowen R., 1984. Geology in engineering. Elsevier, New York. Desonie D., 2012. Earth Science For High School. eBooks at CK-12 FOUNDATION. Earle St., 2019. Physical Geology. eBooks at BCcampus Open Education. Hencher St., 2012. Practical Engineering Geology. CRC Press.	
Supplementary references	Han D., 2010. Concise Hydrology. eBooks at bookboon.com King Ch., 2010. The planet we live on: The beginnings of the Earth Sciences. ebooks at Learning Development Institute	
Organisational unit conducting the course	**Department of Agri-Food Engineering and Environmental Management**	**Date of issuing the programme**
Author of the programme	**dr Piotr Kondratiuk**	**07.02.2019**

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW - field work, S – seminar