Annex No. 5

to Ordinance No. 21/2019

**COURSE/MODULE SYLLABUS FOR UNIVERSITY COURSES/PhD STUDIES**

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|  | Course/module name in Polish and English  Natural stone in architecture/Kamień w architekturze | | |
|  | Discipline  Earth and Environmental Science | | |
|  | Language of instruction  English | | |
|  | Teaching unit  Faculty of Earth Science and Environmental Management, Institute of Geological Sciences, Department of Experimental Petrology, Department of Mineralogy and Petrology | | |
|  | Course/module code  USOS | | |
|  | Type of course/module *(mandatory or optional)*  elective | | |
|  | Field of studies (major, if applicable)  Geology (spec. Applied Geoscience) | | |
|  | Level of higher education *(undergraduate (I cycle), Master’s (II cycle), 5 year uniform Master’s studies)*  Master’s (II cycle) | | |
|  | Year of studies *(if applicable*)  I | | |
|  | Semester *(winter or summer)*  summer | | |
|  | Form of classes and number of hours  Lectures: 14  Classes: 14  Field classes: 6  Teaching methods  Multimedia lecture, practical exercises, individual work, group work, preparation of reports | | |
|  | Name, title/degree of the teacher/instructor  Coordinator: Dr Wojciech Bartz  Lecturer: Dr Wojciech Bartz, Dr hab. Piotr Gunia Prof. UWr  Classes instructor: Dr Wojciech Bartz, Dr hab. Piotr Gunia Prof. UWr | | |
|  | Course/module prerequisites, in terms of knowledge, skills, social competences  General knowledge and skills acquired during bachelor degree studies in geology or related fields. | | |
|  | Course objectives  The main objective of the course is to familiarize students with the basic features of Petrographic-, physico-mechanical- and chemical properties of natural stones used as an construction material and in architecture. The basic principles of the exploitation, processing and use of natural stone will be presented during the course, in the light of European standards, Polish standards and environmental requirements. Basic types of building stones and methods of their study will be discussed. The main deposits of building stone in Poland and the most important European deposits, along with examples of their use will be given. Part of the course will be devoted to the problems of weathering of natural stone in the architectural details and the related aspects of prevention. | | |
|  | Course content  Lecture  1. Quarries and stone exploitation.  2. Raw rock materials - methods of quarrying and stone processing.  3. Basic definitions connected with physico-mechanical properstieis of stone building material.  4. Methods of rock testing, in light of European and Pslish standarts.  5. Durability of stone building materials, corrosion and weathering, methods of preventing.  6. Overview of main rock types for an application as building stone.  7. Examples of applications in architecture: igneous rocks.  8. Examples of applications in architecture: sedimentary rocks.  9. Examples of applications in architecture: metamorphic rocks.  10. Stone in architecture of Wrocław.  Classes and field classes  1. The planning, praparation and interpretation of mineralogical-petrographical research results of selected stone raw materials for their application as a building stone.  2. Demonstration of the most popular Polish building stones.  3. Identification of selected samples taken from architectural details and provenance of identified rocks, preparing research report. | | |
|  | Intended learning outcomes  P\_W01 Student knows the basic types of stone materials, their suitability for building, as well as historical and actual methods of stones exploitation and their processing for construction purposes.  P\_W02 Student knows the basic physico-mechanical properties of rocks and methods of their assessment and measure; has knowledge of the European and Polish standards for rock testing applied as building stones.  P\_U01 Student knows how to plan and carry out basic tests of rock materials used in architecture by means of mineralogical and petrographic methods of investigation.  P\_U02 Student is able to prepare research reports of investigated rock materials in accorddance with European and Polish standards for rock testing.  P\_K01 Student is aware of the need for constant updating of knowledge.  P\_K02 Student has the ability to work in multimember-teams. | Symbols of learning outcomes for particular fields of studies, *e.g. K\_W01\**, *K\_U05,K\_K03*  K2\_W03, K2\_W07, K2\_W08,  K2\_W02, K2\_W06, K2\_W10  K2\_U01, K2\_U04  K2\_U02, K2\_U03, K2\_U06, K2\_U07,  K2\_K01  K2\_K02 | |
|  | Required and recommended reading *(sources, studies, manuals, etc.)*  Required reading  Atlas kamieni naturalnych dostępnych na rynku polskim. F.H.U. ‘WANDA”,  P.H.U. „h.g. BRAUNE”, Jawor  Duggal S. K., Building materials. New Delhi, New Age International (P) Limited, Publishers 2008.  Mukherjee S., Applied Mineralogy. Applications in Industry and Environment. Dordrecht; New York : New Delhi, India, Springer 2011.  Přikryl R., Smith, B. J., Building Stone Decay. From Diagnosis to Conservation. Geological Society, London, Special Publications, 271 (2007).  Přikryl, R., Török A., Natural Stone Resources for Historical Monuments. GeologicalSociety, London, Special Publications, 333 (2010).  Siegesmund S., Weiss T., Vollbrechtnatural A., Stone, Weathering Phenomena, Conservation Strategies and Case Studies. Geological Society, London, Special Publications, 205 (2002).  Siegesmund S., Snethlage R., Stone in architecture: properties and durability. Berlin, Heidelberg, Springer-Verlag 2011. | | |
|  | Assessment methods for the intended learning outcomes:  Lecture: written test. K2\_W02, K2\_W03, K2\_W06, K2\_W07, K2\_W08, K2\_W10, K2\_K01.  Classes and field classes: preparation of a project. K2\_U01, K2\_U02, K2\_U03, K2\_U04, K2\_U06, K2\_U07, K2\_K02. | | |
|  | Credit requirements for individual components of the course/module:  Lecture  - written test (objective (multiple-choice) type), a positive result after obtaining at least 50% of the points  Classes and field classes  - monitoring attendance, preparing and implementing a project (individual and group),  - attendance is obligatory,  - the opportunity to make up for an absence as part of an individual work. | | |
|  | Total student effort | | |
| form of student activities | | number of hours for the implementation of activities |
| classes (according to the plan of studies) with a teacher/instructor:  - lectures: 14  - classes: 14  -field classes: 6 | | 34 |
| student's own work (including group-work) such as:  - consultation: 6  - being prepared for classes: 5  - reading the suggested literature: 5  - writing a class report: 10  - preparing for tests and exam: 15 | | 41 |
| Total number of hours | | 75 |
| Number of ECTS credits | | 3 |