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  Geologia strukturalna/Principles of structural geology | | |
|  | Discipline  Earth and Environmental Science | | |
|  | Language of instruction  English | | |
|  | Teaching unit  Faculty of Earth Science and Environmental Management, Institute of Geological Sciences | | |
|  | Course/module code  USOS | | |
|  | Type of course/module *(mandatory or optional)*  optional | | |
|  | Field of studies (major, if applicable)  Geology | | |
|  | Level of higher education *(undergraduate (I cycle), Master’s (II cycle), 5 year uniform Master’s studies)*  undergraduate (I cycle) | | |
|  | Year of studies *(if applicable*)  II | | |
|  | Semester *(winter or summer)*  summer | | |
|  | Form of classes and number of hours  Lectures: 24  Classes: 24  Teaching methods:  presentation, discussion, practical exercises, individual work. | | |
|  | Name, title/degree of the teacher/instructor  Coordinator: prof. dr hab. Paweł Aleksandrowski  Lecturer: prof. dr hab. Paweł Aleksandrowski  Classes instructor: dr Artur Sobczyk | | |
|  | Course/module prerequisites, in terms of knowledge, skills, social competences  Knowledge and skills covering the content of lectures classes and/or field classes of physical geology, physics and mathematics taught at the 1st years’ level. | | |
|  | Course objectives  The course acquaints students with basic notions, research methods and current progress achieved in the domain of structural geology. It is also intended to prepare students to undertake self-studies in this domain and to teach them practical application of the acquired knowledge and skills in various situations during future professional activities. | | |
|  | Course content  Lectures:  Definitions, tasks and methods of structural geology and tectonics. Scope of interests, position among geological sciences; review of most important and international literature: manuals and periodicals. Notion and methods of structural analysis. Physical basis of structural geology and tectonics. Stress and strain - basic definitions, formulas and relationships. Elements of rheology and rock mechanics. Present-day in situ stresses in rock massifs - methods of measurements and interpretation. Regional patterns of in situ stresses in earth's crust and their relationships with regional and global tectonics. Tectonic regimes. Brittle tectonic structures - their morphology and origin. Joints and faults, fault-related fractures, typical joint patterns. Brittle shear zones. Thermal jointing. Classification, morphology and origin of faults. Linked fault systems produced in thrusting, strike-slip and normal faulting regimes.  Classes:  Methods of spatial analysis of orientation aspects of tectonic structures using Lambert-Schmidt stereonets. Basic methods of structural analysis applied to selected simple tectonic structures originated in both brittle and ductile regimes. | | |
|  | Intended learning outcomes  W\_1 Knows the basic terminology and concepts used in structural geology  W\_2 Iis aware of physical foundations and mechanisms of tectonic deformation in various conditions of pressure and temperature  W\_3 Knows a wide range of tectonic structures and of the genetic processes in which they have formed  U\_1 Is able to classify, recognize and describe typical tectonic structures based on macroscopic observation, geological map analysis and remote sensing data  U\_2 Is prepared to undertake orientation and dimension measurements of particular types of tectonic structures in outcrops or on the basis of geological maps or remote sensing data and is able to analyse those measurements and plot them on maps, cross-sections or stereographic projection. He/she is able to pose and test working hypotheses concerning the origin and evolution of tectonic structures  K\_1 Is able to critically consider the structural geological information provided. Is aware of the necessity to broaden and deepen his/her knowledge of structural geology in case it should be useful in professional activity  K\_2 Shows responsible attitude with regard to the equipment he/she borrowed and to the teaching rooms. | Symbols of learning outcomes for particular fields of studies:  K1\_W03, K1\_W04, K1\_W07  K1\_W03, K1\_W04, K1\_W07  K1\_W03, K1\_W04, K1\_W07  K1\_U01, K1\_U04, K1\_U06  K1\_U01, K1\_U04, K1\_U06    K1\_K05, K1\_K06  K1\_K04 | |
|  | Required and recommended reading *(sources, studies, manuals, etc.)*  Required reading: Van der Pluijm A. & Marshak S., 2004. Earth Structure, 2nd ed., W.W. Norton & Co, New York.  Recommended reading: Fossen H., 2016, Structural Geology, 2nd Ed, Cambridge University Press. Twiss R.J. & Moores E.M., 2006, Structural Geology, 2nd Ed., Freeman & Co., New York Price N.J. & Cosgrove J.W, 1990, Analysis of Geological Structures, Cambridge University Press.  Ragan D.M., 2009, Structural Geology - an introduction to geometrical techniques, 4th Ed, Cambridge University Press. Groshong S.H., 2006. 3-D Structural Geology. Springer, Berlin - Heidelberg. | | |
|  | Assessment methods for the intended learning outcomes:  - exam (written): K1\_W03, K1\_W04, K1\_W07, - control tests (written): K1\_W03, K1\_W04, K1\_W07, K1\_U01, K1\_U04, K1\_U06, K1\_K04, K1\_K05, K1\_K06. | | |
|  | Credit requirements for individual components of the course/module:  Lectures: Exam (written) – after completing the classes’ tests. Positive result – after aquisition of minimum 60% score.  Classes: 3 tests (including practical skills’ evaluation). Positive result – after aquisition of minimum 60% score.  Possible number of absences - in accordance with the study regulations. | | |
|  | 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: 24  - classes: 24 - consultations: 2  - exam: 2 | | 52 |
| student's own work (including group-work):  - preparing for classes: 20  - reading suggested literature: 20  - preparing for exam: 10 | | 50 |
| Total number of hours | | 102 |
| Number of ECTS credits | | 4 |