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  Methods in structural geology/Metody geologii strukturalnej | | |
|  | Discipline  Earth and Environmental Science | | |
|  | Language of instruction  English | | |
|  | Teaching unit  Faculty of Earth Science and Environmental Management, Institute of Geological Sciences, Department of Structural Geology and Tectonics | | |
|  | Course/module code  USOS | | |
|  | Type of course/module *(mandatory or optional)*  mandatory | | |
|  | 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)*  winter | | |
|  | Form of classes and number of hours  Lectures: 14  Classes: 24 | | |
|  | Name, title/degree of the teacher/instructor  Coordinator: Prof. dr hab. Paweł Aleksandrowski  Lecturer: Prof. dr hab. Paweł Aleksandrowski  Classes instructor: Dr Artur Sobczyk, Dr Stanisław Burliga | | |
|  | Course/module prerequisites, in terms of knowledge, skills, social competences  Basic knowledge of structural geology, tectonics and principles of geological mapping and related practical skills. | | |
|  | Course objectives  Teach to apply selected up-to-date basic structural geology methods in describing and analysing tectonic structures. | | |
|  | Course content  Lectures: Basic notions of rheology and rock mechanics. Methods of analysis of folds. Kinematic and dynamic analysis of faults. Basics of strain analysis. Geometrical and dynamic analysis of joint networks. Introduction to geological cross-section balancing. Methods of structural analysis of metamorphic terrains. Introduction to analysis and interpretation of large-scale tectonic structures (tectonic analysis and synthesis).  Classes: Orientation analysis of folds using stereographic projection methods. Classification of folds based on their morphological and geometrical features. Analysis of faults and fault systems developed in various tectonic regimes. Characteristics of tectonic strains produced in ductile deformation regimes. Determination of palaeostresses from brittle tectonic structures. Analysis of structures produced in metamorphic conditions (foliations, lineations, shear-sense indicators). Basics of palaeogeographic reconstructions using plate tectonic principles. | | |
|  | Intended learning outcomes  Student  P\_W01 has in-depth knowledge about endogenic phenomena and processes taking place in the Earth’s crust, while perceiving the relevant interrelationships.  P\_W02 Shows knowledge of descriptive geometry, geological mapping rules, mathematics, basics of rock and soil mechanics within an extent necessary to apply methods of structural geology.  P\_W03 Has knowledge of the current problems of structural geology and tectonics and of their applications using modern research methods.  P\_W04 Student has in-depth knowledge of structural geology and tectonics.  P\_W05 Has in-depth knowledge of the English-language terminology used in structural geology and tectonics.  P\_U01 Has acquired skills enabling him/her to make use of scientific literature concerning structural geology and tectonics.  P\_U02 Is capable of applying selected techniques and research tools to describe and interpret various types of tectonic structures.  P\_U03 Has skills of critical analysis and selection of geological data and in his/her research and practical activities consistently applies principles of empirically-based interpretation of natural phenomena and processes.  P\_U04 Has skills of writing brief, concise reports on the tectonic analyses he/she has carried out.  P\_K01 Is capable of planning minor analytical tasks, including cooperation on a team, and observes the deadlines to complete them.  P\_K02 Is aware of the need to continuously update and broaden the knowledge and practical techniques of structural geology and tectonics. | Symbols of learning outcomes for particular fields of studies, *e.g. K\_W01\**, *K\_U05,K\_K03*  K2\_W01, K2\_W08  K2\_W02, K2\_W05  K2\_W03  K2\_W08  K2\_W09  K2\_U02  K2\_U01, K2\_U04  K2\_U03, K2\_U05  K2\_U06  K2\_U04, K2\_K02  K2\_K01 | |
|  | Required and recommended reading *(sources, studies, manuals, etc.)*  Required reading  Fossen H., 2016, *Structural Geology*, 2nd Ed., Cambridge University Press.  Rowlands S.M., Duebendorfer E.M., Schiefelbein I., 2007*, Structural Analysis and Synthesis:: a laboratory course in structural geology*, Blackwell, Oxford.  Recommended reading  Van der Pluijm A. & Marshak S., 2004. Earth Structure, 2nd ed., W.W. Norton & Co, New York  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:  Lecture: exam (written). K2\_W01, K2\_W02, K2\_W03, K2\_W05, K2\_W08, K2\_W09.  Classes: report on classes’ practical tasks. K2\_U01, K2\_U02, K2\_U03, K2\_U04, K2\_U05, K2\_U06, K2\_K01, K2\_K02. | | |
|  | Credit requirements for individual components of the course/module:  Lecture:  - exam (written), positive result – after aquisition of minimum 60% score.  Classes:  - report on completed practicals tasks – after aquisition of minimum 60% score.  Percentages and weights taken into account for the final grade: exam result – 50%; classes result – 50%. | | |
|  | 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: 24  -consultations: 10  -exam: 2 | | 50 |
| student's own work (including group-work) such as:  - preparing for classes: 8  - writing a class report: 16  -reading recommended literature: 12  - preparing for tests and exam: 12 | | 48 |
| Total number of hours | | 98 |
| Number of ECTS credits | | 4 |