Annex No. 5
to Ordinance No.
21/2019

COURSE/MODULE SYLLABUS FOR UNIVERSITY COURSES/PhD STUDIES

1.	Course/module name in Polish and English Exploration geophysics/ Geofizyka poszukiwawcza
2.	Discipline Earth and Environmental Science
3.	Language of instruction English
4.	Teaching unit Faculty of Earth Science and Environmental Management, Institute of Geological Sciences
5.	Course/module code USOS
6.	Type of course/module *(mandatory or optional)* optional
7.	Field of studies (major, if applicable) Geology
8.	Level of higher Master's (II cycle)
9.	Year of studies *(if applicable*) I or II
10.	Semester *(winter or summer)* Winter or summer
11.	Form of classes and number of hours Lectures: 24 Lab classes: 24 Teaching methods: Multimedia lecture, presentation, practical exercises, individual work, group work, preparation of reports.
12.	Name, title/degree of the teacher/instructor Coordinator: dr hab. Jerzy Sobotka, prof. UWr. Lecturer: dr hab. Jerzy Sobotka, prof. UWr. Classes instructor: dr hab. Jerzy Sobotka, prof. UWr. Field classes instructor: dr hab. Jerzy Sobotka, prof. UWr.
13.	Course/module prerequisites, in terms of knowledge, skills, social competences Basic – mathematics, physics, chemistry and geology. Geophysics – bachelor levels.
14.	Course objectives

	The geophysical instrumentation and procedures used to acquire seismic, gravity, magnetic, electrical, electromagnetic and radiometric data in field surveys.	
15.	Course content Lectures: To provide a basic knowledge and understanding of magnetic, electrical, electromagnetic, and radiometric (field and borehole) methods as they are applied to the exploration for hydrocarbons prospecting methods and metallic and nonmetallic mineral deposits. The physical properties of rocks and minerals, such as elastic wave velocities, absorption factors, electrical and thermal conductivities, magnetic susceptibilities, and behavior under stress.The geophysical instrumentation and procedures used to acquire seismic, gravity, magnetic, electrical, electromagnetic and radiometric data in field surveys. Shallow geological structures recognition, ground water exploration, engineering geology and environmental protection. Geophysical methods application to rock resources (building materials) exploration. Geophysical methods application to ore deposits exploration and recognition. Lab classes: Exercises that cover areas of lectures are carried out in: 1) computer lab (interpretation of the geophysical measurements). 2) geophysical laboratory (geophysical measurements in the laboratory). 3) the practical field exercises.	
16.	Intended learning outcomes	Symbols of learning outcomes for particular fields of studies,
	W_1 Has knowledge of exact sciences related to selected aspects of geological sciences (geophysics, and soils).Has knowledge of the current problems of Earth sciences and environmental sciences as well as contemporary research methods used in them.	K2_W03, K2_W04
	W_2 Knows the general principles of planning research using techniques and tools used in geophysics. Has deepened knowledge of selected disciplines of geological sciences.	K2_W06, K2_W08
	U_1 Can apply advanced techniques and research tools in the field of selected geological disciplines (geophysics).	K2_U01
	U_2 Is able to plan and perform research tasks or expert opinions under the supervision of a tutor.	K2_U04
17.	Required and recommended reading *(sources, studies, manuals, etc.)* Required reading E.I Parkhomenko, 1971: Electrification phenomena in rocks. New York, Pleunum Press. P. Keary, M. Brooks, 1991: An Introduction to Geophysical Exploration Blackwell Publishing. W.M. Telford, L.P. Geldart, R. E. Sheriff, 1990: Applied Geophysics Cambridge University Press. M.B. Dobrin, C.H. Savit, 1988: Introduction to Geophysical Prospecting McGraw Hill. William Lowrie, 1997: Fundamentals of geophysics. Cambridge Universtiy Press, Cambridge.	

<table>
<tr><td></td><td colspan="2">Recommended reading

Blakely R. J., 2001: Potential theory in gravity and magnetic application, Cambridge.
Sobotka J., 2005: Zastosowanie zjawisk interakcji pół akustycznych i elektrycznych w diagnostyce skał zbiornikowych oraz poszukiwaniu złóż węglowodorów. Wyd. AGH, Kraków.</td></tr>
<tr><td>18.</td><td colspan="2">Assessment methods for the intended learning outcomes:
- oral exam: K2_W03, K2_W04, K2_W06, K2_W08.
- semester paper (individual or group): K2_W03, K2_W04, K2_W06, K2_W08, K2_U01, K2_U04.
- preparation and implementation of a project (individual): K2_U01, K2_U04</td></tr>
<tr><td>19.</td><td colspan="2">Credit requirements for individual components of the course/module:
- monitoring attendance and progress on the course subject matter,
- preparing and implementing a project (individual),
- exam (oral)
- lab classes: semester paper (individual or group), preparation and implementation of a project (individual), students activity.
- The final objectives: exam - 70%, Lab classes - 30 %.</td></tr>
<tr><td rowspan="5">20.</td><td colspan="2">Total student effort</td></tr>
<tr><td>form of student activities</td><td>number of hours for the implementation of activities</td></tr>
<tr><td>classes (according to the plan of studies) with a teacher/instructor:
- lectures: 24
- lab classes: 24
- exam: 2</td><td>50</td></tr>
<tr><td>student's own work (including group-work) such as:
- being prepared for classes: 15
- reading the suggested literature: 10
- preparing papers/presentations/projects: 15
- preparing for tests and exam: 10</td><td>50</td></tr>
<tr><td>Total number of hours</td><td>100</td></tr>
<tr><td>Number of ECTS credits</td><td>4</td></tr>
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