Attachment no. 1 to Programme of Education

Education/Learning Outcomes for the main field of study

(Assumed educational effects)

Faculty: Geoengineering, Mining, and Geology
Main field of study: mining and geology
Education level: 2nd magister studies
Profile: general academic
Specialization: Exploratory and Mining Geology

Description of symbols/Legend
K – education/learning outcome for the main field of study
W – category of knowledge
U – category of skills
K (after an underscore) – category of social competences
OT –education/learning outcome for the education area of technical sciences
01, 02, 03 and further – number of education/learning outcome
2 – second level studies
A – general academic profile

Education/ learning outcome for 2nd level studies in the main field of study (K)	**DESCRIPTION OF THE MAIN-FIELD-OF-STUDY EDUCATION/LEARNING OTCOMES** **On completion the 2nd level studies in the field of mining and geology a graduate:**	**Correlation with education/ learning outcomes for the education area in the field of technical sciences (OT)**
KNOWLEDGE		
K_W01	has fundamental knowledge of the methods of the geostatistical analysis of deposit parameters and their possible applications	OT2A_W01
K_W02	has broadened and deepened knowledge related to physics embracing the fundamentals of quantum physics and the physics of solid state necessary to understand the physical phenomena of essential influence on the matter properties	OT2A_W01
K_W03	has consolidated knowledge related to the principles and methods of the mineral deposit recognition, prospecting and exploration performed prior to its exploitation, the geological deposit documentation and the computer assistance to geological works and studies connected with the prospecting and exploration	OT2A_W03 OT2A_W04 OT2A_W05

K_W04	has knowledge and theoretical grounding connected with the rules and laws of the Earth phenomena and processes	OT2A_W04
K_W05	has thorough knowledge and theoretical grounding related to the recognition, prospecting and exploration of mineral deposits using the methods of the surface and borehole (well logging) geophysics, the application of the geophysical methods during mining operation with special regard to prediction, detection and suppression of mining and natural hazards	OT2A_W03 OT2A_W04 OT2A_W05
K_W06	has systematised knowledge related to the resources and production (output) of raw minerals in the world and in Poland and the deposit genesis, forms of deposits, their qualitative parameters and trends in their use	OT2A_W03
K_W07	has consolidated knowledge of geological and hydrogeological works necessary to maintain the mining process of the useful mineral deposits with special regard to useful solid mineral deposits	OT2A_W03 OT2A_W04
K_W08	has elementary knowledge of the methods of the digital modelling of deposits and the analysis of their parameters variability	OT2A_W02 OT2A_W04
K_W09	has knowledge and theoretical grounding related to the most important methods of the examination of the minerals and rocks as the raw minerals in order to determine their physical and chemical properties and also structural characteristics	OT2A_W04
K_W10	has fundamental knowledge of the economic aspects of the recognition of raw mineral deposits, Polish and world raw mineral management and also the protection of the mineral deposits	OT2A_W04 OT2A_W08
K_W11	has knowledge and theoretical grounding related to geological (natural) and mining (technological) factors influencing mining operations	OT2A_W03 OT2A_W04 OT2A_W07
K_W12	has knowledge related to the systems of the environment control and management using information tools in Poland and in EU countries	OT2A_W09
K_W13	has fundamental knowledge of the role and fundamental principles of the finance management	OT2A_W01 OT2A_W08 OT2A_W09
K_W14	has fundamental knowledge necessary to understand the social and psychological factors of the engineering activity	OT2A_W08
SKILLS		
K_U01	is able to develop the spatial variability model of a deposit parameter and use it to design (to plan) the deposit exploitation	OT2A_U08 OT2A_U09
K_U02	is able to read and make maps, geological-depositional cross-sections and maps of the variability of the deposit parameters; is able to prepare the data for digital deposit modelling; knows the rules of developing the geological documentation, hydrogeological documentation and	OT2A_U09 OT2A_U19

	geological-engineering documentation; knows possible applications of computer programs to such the tasks	
K_U03	is able to interpret the results of 2D reflection and refraction seismic measurements and also the results of gravity anomaly measurements	OT2A_U08
K_U04	is able to prepare the project of geological works for the dewatering well and piezometers; is able to document the results of hydrogeological mapping of mining workings; is able to determine the position of structural surfaces within mining workings; is able to analyse the tectonic structure of the deposit and the variability of deposit parameters; is able to interpret the results of the tentative pumping and develop the water documentation for the mine dewatering and mining water disposal	OT2A_U07 OT2A_U09
K_U05	is able to determine the macroscopic distinctive characteristics of raw minerals and their basic types; knows elements of crystal optics; is able to identify microscopic characteristics of basic types of rocks, analysed with reflected and transmitted light	OT2A_U08
K_U06	is able to do the measurements of fundamental (main and indicative) physical-chemical parameters of groundwater; is able to interpret the results of detailed laboratory examinations of waters (maps and hydrogeological cross-sections); is able to determine the hydrogeochemical background and anomalies for selected water parameters; knows open-to-the-public computer programs assisting the hydrogeochemical investigations	OT2A_U07 OT2A_U17
K_U07	is able to apply in practice selected methods for the examination of rock and mineral samples	OT2A_U08
K_U08	is able to apply the analytical solutions to chosen problems of groundwater flow; is able to solve numerically the problems of well-water inflow; is able to prepare the project – the geological-engineering documentation for the selected object in the mining area	OT2A_U11 OT2A_U13
K_U09	is able to analyse and present synthetically problems typical of the economic aspects of the deposit recognition, management and protection of their resources	OT2A_U01 OT2A_U04
K_U10	is able to interpret data included in the enterprise financial reports, analyse the enterprise financial situation, develop the simple financial model and use the sophisticated methods of the investment effectiveness assessment	OT2A_U01 OT2A_U14
K_U11	is able to use the methods and appropriate information tools in the management systems of environment components	OT2A_U07
K_U12	has language skills in scientific disciplines, the field and specialization of study related to the studied discipline and is able to use the specialization language to communicate in their professional environment using various techniques in the field of the studied discipline; understands their specialization literature in a foreign	OT2A_U01 OT2A_U03

	language and is able to interpret it, draw conclusions, obtain necessary information, carry out critical analysis and assess; is able to read and comprehend professional literature, business and technical documentation (catalogues of products, operation manuals of equipment and tools, computer programs etc.); is able, in a foreign language, to prepare a well-documented study (e.g. a short scientific report with the results of own research) or present the description of equipment, products of a company, technological problems etc.; is able to formulate and justify opinions in full, prepare and give an oral presentation concerning problems related to the studied discipline and topics connected with the work environment and also take part in scientific and professional discussions	
K_U13	uses a foreign language understood by a home speaker and is able to communicate in speaking and writing in everyday life; has elementary foreign language skills such as: understands simple spoken and written formulations, is able to make social relations, talk coherently about the well-known subject, can write an e-mail, postcard or note; distinguishes and uses to some extent the formal and informal aspect of a foreign language; uses their basic social and cultural knowledge while communicating in a given language	OT2A_U01 OT2A_U03
K_U14	understands quite well the content and intentions of a speech or text on the well-known everyday-life or professional subject; is able to write a short text about the well-known topic, including a practical one (e.g. an informal letter); is able to take part in talks about known subjects and to some extent talk about their studies and professional work using their social and cultural knowledge	OT2A_U01 OT2A_U03
SOCIAL COMPETENCES		
K_K01	is able to think and act in a creative and entrepreneurial way	OT2A_K04 OT2A_K05
K_K02	understands the need to formulate information and opinions concerning achievements in mining engineering and other aspects of a mining engineer activity and share them with the society, among other means, through mass media; makes efforts to share the information and opinions in an understandable way, presenting them from different points of view; realises the value of and the need to form the safety culture in the workplace and the responsibility for the health and life of all the other employees in the mining industry	OT2A_K06 OT2A_K07