Zał. Nr 1 do ZW 78/2023

PROGRAM OF STUDIES

FACULTY OF GEOENGINEERING, MINING AND GEOLOGY
MAIN FIELD OF STUDY: Mining and Geology
BRANCH OF SCIENCE: Engineering and Technical Sciences
DISCIPLINE: D1 Environmental Engineering, Mining and Energy
EDUCATION LEVEL: second-level studies (4 semesters)
FORM OF STUDIES: full-time studies
PROFILE: general academic
LANGUAGE OF STUDY: English

Content:

In effect since 2024/2025

Zał. Nr 2 do ZW 78/2023
Attachment no. 1. to the Program of Studies

ASSUMED LEARNING OUTCOMES

FACULTY OF GEOENGINEERING, MINING AND GEOLOGY

MAIN FIELD OF STUDY: Mining and Geology

EDUCATION LEVEL: second-level studies

PROFILE: general academic

Location of the main-field-of study:

Branch of science: **Engineering and Technical Sciences**

Discipline: **Environmental Engineering, Mining and Energy**

.....

Explanation of the markings:
P6U – universal first degree characteristics corresponding to education at the first-level studies - 6 PRK level *
P7U – universal first degree characteristics corresponding to education at the second-level studies - 7 PRK level *

P6S – second degree characteristics corresponding to education at the first-level studies - 6 PRK level *
P7S – second degree characteristics corresponding to education at the second-level studies - 7 PRK level *

W - category "knowledge"
U - category "skills"
K - category "social competencies"
K (*faculty symbol*) _W1, K (*faculty symbol*) _W2, K (*faculty symbol*) _W3, … - main-field-of study learning outcomes related to the category "knowledge"
K (*faculty symbol*) _U1, K (*faculty symbol*) _U2, K (*faculty symbol*) _U3, … - main-field-of study learning outcomes related to the category "skills"
K (*faculty symbol*) _K1, K (*faculty symbol*) _K2, K (*faculty symbol*) _K3, … - main-field-of study learning outcomes related to the category "social competences"
… _inż. – learning outcomes related to the engineer competencies

* delete as applicable

Main field of study learning outcomes	**Description of learning outcomes for the main-field-of study** After completion of studies, the graduate:	Reference to PRK characteristics		
		Universal first degree characteristics (U)	Second degree characteristics typical for qualifications obtained in higher education (S)	
			Characteristics for qualifications on 6 / 7* levels of PRK	Characteristics for qualifications on 6 and 7 levels of PRK, enabling acquiring engineering competences
KNOWLEDGE (W)				
K2_GIG_W01	has knowledge of effective scientific expression and presentation, knows the rules and methods for conducting scientific research and presenting their results in a scientific publication	P7U_W	P7S_WG	
K2_GIG_W02	has extended and in-depth knowledge of physics and/or chemistry, necessary to understand the phenomena and processes affecting the properties of the Earth's crust and raw materials it contains.	P7U_W	P7S_WG	
K2_GIG_W03	has basic knowledge of the role and main principles of financial management in the enterprise; has in-depth knowledge of the economic evaluation of investment projects and investment risk assessment	P7U_W	P7S_WG P7S_WK	P7S_WG_inż P7S_WK_inż
K2_GIG_W04	has systematized knowledge of the fundamentals and types of environmental management systems in Poland and EU countries; knows the tools and instruments supporting their implementation and the applicable legal regulations.		P7S_WG P7S_WK	P7S_WG_inż P7S_WK_inż
K2_GIG_W05	has the basic knowledge necessary to understand the social and psychological determinants of engineering activities	P7U_W	P7S_WK	P7S_WK_inż
K2_GIG_W06	has knowledge of the basic decision models in management with the use of IT tools/applications	P7U_W	P7S_WK	P7S_WK_inż
K2_GIG_W07	has knowledge of the processes and technologies used in geoengineering, mining and processing of mineral resources		P7S_WG	P7S_WG_inż

K2_GIG_W08	has in-depth knowledge of the recognition and assessment of resources, quality, and value of the deposit, legal procedures to launch mine operations, and to conduct mining and mineral processing	P7U_W	P7S_WG P7S_WK	P7S_WG_inż P7S_WK_inż
K2_GIG_W09	has knowledge of the operation of mining or geoengineering enterprises as well as about their production management and optimization		P7S_WG P7S_WK	P7S_WG_inż P7S_WK_inż
K2_GIG_W10	has extended knowledge of the sciences describing the phenomena that are the basis of technologies used in mining and mineral engineering and the sciences explaining the phenomena and threats accompanying mining, mineral engineering, and environmental protection, in particular in the field of rock mass mechanics, soil mechanics, geophysics, hydrogeology, and ecology	P7U_W	P7S_WG P7S_WK	P7S_WG_inż P7S_WK_inż
K2_GIG_W11	knows the formal and legal conditions in the fields of geology, mining, geoengineering, mineral engineering and environmental protection	P7U_W	P7S_WK	
K2_GIG_W12	has knowledge of the rational use of environmental resources, circular economy and economic activity sustainable in terms of innovation, environmental protection and safety	P7U_W	P7S_WG P7S_WK	P7S_WG_inż P7S_WK_inż
K2_GIG_W13	knows the environmental impact assessment procedures and their legal regulations, factors influencing such an assessment, its stages, and the effectiveness of the applied research methods; knows the basic concepts and frameworks of environmental risk and human health exposure assessments		P7S_WG P7S_WK	P7S_WG_inż P7S_WK_inż
K2_GIG_W14	has broadened knowledge of the threats that occur in mining and mineral engineering and knows how to counteract them		P7S_WG	P7S_WG_inż
K2_GIG_W15	has basic knowledge of computer modelling of geological structures, computer-aided design, and monitoring of mining or geoengineering objects	P7U_W	P7S_WG P7S_WK	P7S_WG_inż P7S_WK_inż
K2_GIG_W16	has knowledge of changes in the rock mass under the influence of mining, with particular emphasis on its impact on the ground surface and methods of monitoring to protect the surface		P7S_WG	P7S_WG_inż

K2_GIG_W17	knows the methodology and techniques of occupational risk assessment in light of Polish and international law; knows the basics of organization and management of work safety, necessary for management and traffic supervision in mining, geoengineering and mineral engineering	P7U_W	P7S_WG P7S_WK	P7S_WG_inż P7S_WK_inż
K2_GIG_W18	knows methods and tools for designing, calculating, and optimizing systems for the extraction and processing of minerals and waste with the use of mathematical modelling and digital simulation of technological operations	P7U_W	P7S_WG P7S_WK	P7S_WG_inż P7S_WK_inż
K2_GIG_W19	has knowledge of machine systems used in raw material technologies and geoengineering, their reliability and life cycle		P7S_WG P7S_WK	P7S_WG_inż P7S_WK_inż
SKILLS (U)				
K2_GIG_U01	has linguistic resources appropriate for a specialist language and is able to use the specialist language in all linguistic activities to communicate in a professional environment in the field of studied discipline		P7S_UK	
K2_GIG_U02	has language skills in accordance with the requirements specified for the B2 + level of the European System for the Description of Languages (CEFR) in the foreign language in which learning is continued; understands and interprets professional texts in the field of mining and geology; speaks and writes using academic and engineering language.		P7S_UK	
K2_GIG_U03	concerning the second foreign language understands quite well the content and intentions of an oral statement or written text on a topic known from everyday and professional life; can write a short text on a known topic, including a utility text (e.g. an informal letter); is able to participate in conversations on known topics and to a limited extent expresses themself about studies and professional work, using socio-cultural knowledge		P7S_UK	
K2_GIG_U04	is able to use analytical methods and IT tools, including digital simulation, to design, calculate, and optimize systems for extraction, processing, processing of minerals and waste or revitalization of post-mining facilities	P7U_U	P7S_UW	P7S_UW_inż

K2_GIG_ U05	is able to select and apply appropriate methods and IT tools for systemic management of environmental components under the given geological and mining conditions	P7U_U	P7S_UW	P7S_UW_inż
K2_GIG_U06	is able to build a simple financial model of an investment, examine its profitability and conduct a risk analysis on the grounds of historical data and financial forecasts		P7S_UW	P7S_UW_inż
K2_GIG_U07	is able to design processes and technological systems used in geoengineering, mining or processing of mineral resources, is able to program basic models/algorithms of technological operations when applied to analyze the effectiveness of a complex industrial system	P7U_U	P7S_UW	P7S_UW_inż
K2_GIG_U08	understands the need for lifelong learning and is able to organize the learning of other people	P7U_U	P7S_UU	
K2_GIG_U09	is able to work in a group and lead a team to fully use its potential to solve assigned tasks	P7U_U	P7S_UO	
K2_GIG_U10	can use the knowledge of the sciences describing the phenomena that are the basis of technologies used in mining and mineral engineering and the sciences explaining the phenomena and threats accompanying mining, mineral engineering, and environmental protection for calculations, analyses, and design of facilities, processes and technologies	P7U_U	P7S_UW P7S_UU	P7S_UW_inż
K2_GIG_U11	is able to carry out an occupational risk assessment for selected factors of the working environment with the use of computer tools; is able to independently develop elements of work safety documents required by law	P7U_U	P7S_UW P7S_UO P7S_UK	P7S_UW_inż
K2_GIG_U12	is able to carry out an assessment of the impact of industrial activities on the environment for a simple case study; is able to interpret the documentation regarding the risk assessment of the negative impact of mining activities on the health of the population and independently perform simple risk calculations		P7S_UW P7S_UO	P7S_UW_inż
K2_GIG_U13	is able to critically assess and draw conclusions from various sources and to prepare written documentation or oral presentations on the area of mineral resource engineering		P7S_UW P7S_UK	P7S_UW_inż

K2_GIG_U14	is able to apply and interpret basic decision models with the use of IT tools/applications	P7U_U	P7S_UW P7S_UO P7S_UU	P7S_UW_inż
K2_GIG_U15	is able to make a critical analysis of technical and organizational solutions used in mining, geoengineering and mineral engineering		P7S_UW P7S_UK	P7S_UW_inż
SOCIAL COMPETENCES (K)				
K2_GIG_K01	can think and act creatively and enterprisingly		P7S_KK P7S_KR	
K2_GIG_K02	understands the need to formulate and communicate to society, including through the mass media, information and opinions on the achievements of the mining industry, geoengineering and mineral engineering and other aspects of the engineer's activity; makes efforts to convey such information and opinions in a commonly understandable manner, presenting different points of view; is aware of the value and need of shaping a safety culture work and responsibility for the health and life of other employees	P7U_K	P7S_KK P7S_KO P7S_KR	
K2_GIG_K03	is aware of the importance of nontechnical effects of engineering activities, including their impact on the environment and the related responsibility for decisions made	P7U_K	P7S_KO P7S_KR	

FACULTY OF **GEOENGINEERING, MINING AND GEOLOGY**

MAIN FIELD OF STUDY: **Mining and Geology**

LANGUAGE OF STUDY: **English**

SPECIALIZATION: **Entrepreneurship, Innovation and Technology Integration in Mining – Track LUT - WUST**

Zał. nr 3 do ZW 78/2023

Attachment no. 2. to the Program of Studies

DESCRIPTION OF THE PROGRAM OF STUDIES

Main field of study: Mining and Geology
Level of studies: second level studies
Profile: general academic
Form of studies: full-time studies

1. General description

1.1 Number of semesters: 4	*1.2 Total number of ECTS points necessary to complete studies at a given level: 120*
1.3 Total number of hours: 1365	*1.4 Prerequisites (particularly for second-level studies): Bachelor of Science in Engineering diploma, interview*
1.5 Upon completion of studies graduate obtains professional degree of: magister inżynier	*1.6 Graduate profile, employability:* *The program will train the new T-shaped generation of engineers, technologists, and entrepreneurs who understand the whole raw materials value chain (from the prospection and exploration stages, mining, mineral processing, metallurgy, and up to delivering products to customers), and have the ability to integrate innovations and new technologies (e.g. digitalization) into modern and feasible business solutions with high impact on the industry.* *The specialists will have in-depth practice knowledge of technologies entering the raw materials sector gained through industrial experts' mentoring. Innovation and technology integration have become the backbone of the industry's development. By integrating innovation, technology, creativity, and entrepreneurship, the graduates will be able to transform real problems into research challenges and generate innovative ideas and strategies with the entrepreneurial vision.*

	Graduates of the program will be prepared to participate actively in the undergoing transformation of the mining sector, through a sound practical knowledge of the latest technologies, and the ability to integrate innovation and new technologies into feasible business. The Graduates will understand technical, business, social, and economic aspects and, therefore, stimulate their technological innovation and technology integration capacities. *The Graduates will be fully qualified to work for: mining and metallurgical companies, EU bodies (raw materials and industry), investment banks (raw materials sector), venture capital (raw materials sector), national/regional government agencies, engineering and consulting firms, knowledge institutions, research institutes and think-tanks as well as a freelanced technologist, specialist and entrepreneur. They will be prepared to work in an international and intercultural environment.*
1.7 Possibility of continuing studies: third level (doctoral school), post-graduate studies *Eligibility to apply for admission to a doctoral school, non-degree postgraduate programmes*	*1.8 Indicate connection with University's mission and its development strategy:* *The study programs of all specializations within the field of study Mining and Geology respond to the strategic goals of the University (Strategia Politechniki Wrocławskiej 2023–2030), by raising the level of correlation of the study offer with the needs of the market (C3), by enhancing the quality of education through didactic interdisciplinarity and by cooperation with industrial partners as well as increasing the level of entrepreneurship, creativity and involvement of students in research processes (C4, C2). Graduates of the faculty should be creative and professional, have theoretical background and practical abilities, as well as have interpersonal skills and cross-cultural experience (C5).* *The Faculty of Geoengineering, Mining and Geology, as one of the units of the Wrocław University of Science and*

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

	Technology, educates in the field of engineering, broadened by knowledge in natural and economic sciences. The profile and quality of education are at the international level and are adapted to the needs of the national and global mineral industries.

2. Detailed description

2.1 Total number of learning outcomes in the program of study: W (knowledge) = 19, U (skills) = 15, K (competences) = 3, W + U + K = 37

~~**2.2 For the main field of study assigned to more than one discipline - the number of learning outcomes assigned to the discipline:**~~

~~**D1 (major) ..... (this number must be greater than half the total number of learning outcomes)**~~

~~**D2 .....**~~

~~**D3 .....**~~

~~**D4 .....**~~

~~**2.3 For the main field of study assigned to more than one discipline - percentage share of the number of ECTS points for each discipline:**~~

~~**D1 .....% ECTS points**~~

~~**D2 .....% ECTS points**~~

~~**D3 .....% ECTS points**~~

~~**D4 .....% ECTS points**~~

2.4a. For the general academic profile of the main field of study – the number of ECTS points assigned to the classes related to the University's academic activity in the discipline or disciplines to which the main field of study is assigned – DN (must be greater than 50% of the total number of ECTS points from 1.2) 93 ECTS

2.4b. ~~For the practical profile of the main field of study - the number of ECTS points assigned to the classes shaping practical skills (must be greater than 50% of the total number of ECTS points from 1.2)~~

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[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
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2.5 Concise analysis of compliance of the assumed learning outcomes with the needs of the labor market

The economic development of the country is closely dependent on natural resources, the ability to use them, and having an appropriate engineering workforce. The assumed learning outcomes correspond to the needs of practice in the field of the generally understood management of mineral resources - technologies and techniques for their identification, valuation, extraction, processing, revitalization of industrial areas, and the practice of managing an enterprise (especially mining) in the sense of managing information, environment, and people, using the latest IT and marketing techniques and methods. This integration of economic needs and assumed educational effects favorably shape the labor market for the graduates of the Faculty. Additionally, a good command of English and experience working in an international group will open up the possibility of working in foreign branches of Polish enterprises and in foreign companies.

2.6. The total number of ECTS points that a student must obtain in classes requiring direct participation of academic teachers or other persons conducting classes and students (enter the sum of ECTS points for courses / groups of courses marked with the BU[1] code) **67,5 ECTS**

2.7. Total number of ECTS points, which student has to obtain from basic sciences classes

Number of ECTS points for obligatory subjects	6
Number of ECTS points for optional subjects	0
Total number of ECTS points	6

2.8. Total number of ECTS points, which student has to obtain from practical classes, including project and laboratory classes (enter total number of ECTS points for courses/group of courses denoted with code P)

Number of ECTS points for obligatory subjects	22
Number of ECTS points for optional subjects	67
Total number of ECTS points	89

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
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2.9. Minimum number of ECTS points, which student has to obtain doing education blocks offered as part of University-wide classes or other main field of study (enter number of ECTS points for courses/groups of courses denoted with code O)

3 ECTS points

2.10. Total number of ECTS points, which student may obtain doing optional blocks (min. 30% of total number of ECTS points)

84 ECTS points

3. Description of the process leading to learning outcomes acquisition:

1. Upon starting classes in each subject, the student has an appropriate level of knowledge and skills that constitute the prerequisites for a given course (it is verified by the teacher or the dean's office).
2. The student participates in classes organized at the university.
3. The student carries out the assigned work in class and at home (projects, computational tasks, analyzes, and prepares presentations) and studies the literature and materials recommended by the teacher.
4. The student uses the appointed hours of the tutor's consultation, explaining his uncertainties and verifying the correct understanding of the course content.
5. The student participates in periodic tests of knowledge and skills, completes the tests available on the e-portal, and is familiar with the correct answers, grades, and comments from the teacher.
6. In some subjects, the student participates in group tasks, taking part in the organization of the group's work, assessing the activities of individual participants, and taking responsibility for the result of the group's work.
7. The student is encouraged to become involved in the work of research clubs, student organizations, discussion clubs, and sports groups, and participate in social life through work in public welfare organizations, and voluntary work, thus gaining valuable interpersonal skills and social competencies.
8. The student participates in meetings with companies from the industry, technical excursions, and job fairs, and tries to gain knowledge about the labor market and additional advantages when applying for a job
9. The student is encouraged to participate in an international student exchange, and through contact with foreigners at the faculty, he or she acquires additional interpersonal, cultural, and language qualifications.

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[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4. List of education blocks:

4.1. List of obligatory blocks:

4.1.1 List of general education blocks

4.1.1.1 *Liberal-managerial subjects* block *(7 ECTS points):*

No.	Subject/ group of classes code	Name of subject/group of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG SM3003G	Project Management, Appraisal and Risk Evaluation (GK)	1		2	1		K2_GIG_W03,W05,W11 K2_GIG_U04,U06,U08,U15 K2_GIG_K01	60	100	4	4	3,1	T/Z(w)	E(w), Z(l,p)		DN	P (3)	KO
2	W06GIG-SM3000W	Operations Research	1					K2_GIG_W06 K2_GIG_U10,U14 K2_GIG_K01	15	25	1	1	0,8	T /Z	Z		DN		KO
3	W06GIG-SM3000L	Operations Research			1				15	50	2	2	0,7	T	Z		DN	P (2)	KO
		Total	**2**	**0**	**3**	**1**	**0**		**90**	**175**	**7**	**7**	**4,6**					**5**	

Altogether for general education blocks

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
2	**0**	**3**	**1**	**0**	**90**	**175**	**7**	**7**	**4,6**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.1.2 List of basic sciences blocks

4.1.2.1 *Mathematics* block

No.	Subject/ group of classes code	Name of subject/group of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3003G	Computer-Aided Geological Modelling & Geostatistics (part: Geostatistics)	1					K2_GIG_W06,W08,W15 K2_GIG_U04,U08,U14	15	50	2		0,8	T	Z				PD
2	W06GIG-SM3000W	Computer-Aided Geological Modelling & Geostatistics (part: Geostatistics)			1				15	25	1		0,6	T	Z			P (1)	PD
		Total	**1**	**0**	**1**	**0**	**0**		**30**	**75**	**3**		**1,4**					**1**	

4.1.2.3 *Physics block*

No.	Subject/ group of classes code	Name of subject/group of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3004W	Engineering Geophysics	1					K2_GIG_W02,W08,W10 K2_GIG_U04,U13	15	25	1	1	0,8	T /Z	Z		DN		PD
	W06GIG-SM3004P	Engineering Geophysics				1			15	50	2	2	0,9	T	Z		DN	P(2)	PD
		Total	**1**	**0**	**0**	**1**	**0**		**30**	**75**	**3**	**3**	**1,7**					**2**	

Altogether for basic sciences blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
2	**0**	**1**	**1**	**0**	**60**	**150**	**6**	**3**	**3,1**

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[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.1.3 List of the main field of study blocks

4.1.3.1 *Obligatory main field of study* blocks

No.	Subject/ group of classes code	Name of subject/group of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3002L	Computer-Aided Geological Modelling & Geostatistics (part: Computer-Aided Geological Modelling)			2			K2_GIG_W06,W08,W15 K2_GIG_U04,U08,U14	30	50	2	2	1,3	T	Z		DN	P(2)	K
2	W06GIG-SM3006W	Digital Mine	1					K2_GIG_W07,W12,W18,W19 K2_GIG_U04,U07,U08	15	25	1	1	0,8	T /Z(w)	Z		DN		K
3	W06GIG-SM3006L	Digital Mine			1				15	25	1	1	0,8	T	Z		DN	P(1)	K
4	W06GIG-SM3005W	Occupational Health and Safety	1					K2_GIG_W11,W12,W14,W17 K2_GIG_U11, K2_GIG_K02, K03	15	25	1	1	0,7	T /Z(w)	Z		DN		K
5	W06GIG-SM3005P	Occupational Health and Safety				1			15	25	1	1	0,8	T	Z		DN	P(1)	K
6	W06GIG-SM3007W	Principles and Application of InSAR and GIS in Mining	2					K2_GIG_W15,W16,W18 K2_GIG_U04,U07,U08	30	50	2	2	1,4	T/Z(w)	E		DN		K
7	W06GIG-SM3007L	Principles and Application of InSAR and GIS in Mining			3				45	75	3	3	2,0	T	Z		DN	P(3)	K
8	W06GIG-SM3001W	Environmental Management	2					K2_GIG_W04,W12,W13,W18 K2_GIG_U05,U10,U11,U12 K2_GIG_K02,K03	30	50	2	2	1,3	T /Z(w)	Z		DN		K
9	W06GIG-SM3001S	Environmental Management					1		15	25	1	1	0,8	T	Z		DN	P(1)	K
10	W06GIG-SM3063G	Integrated Analysis of Deformations in Geomechanical Engineering (GK)	2		2			K2_GIG_W07,W09,W10,W16,W18 K2_GIG_U04,U07,U10,U15 K2_GIG_K01,K02,K03	60	125	5	4	2,9	T/Z	E(w)		DN	P(2)	K
11	W06GIG-SM3062P	Industrial Research Internship Project				2		K2_GIG_W05,W07,W09,W14 K2_GIG_U04,U09,U10,U13 K2_GIG_K01,K02,K03	30	50	2		1,5	T/Z	Z		DN	P(2)	S
12	W06GIG-SM3064P	Field Academy Student Project				3		K2_GIG_W08,W09,W14,W15 K2_GIG_U04,U07,U09,U10,U13 K2_GIG_K02	45	50	2	1	1,8	T/Z	Z		DN	P(2)	S
		Total	**8**	**0**	**8**	**6**	**1**		**345**	**575**	**23**	**19**	**16,1**					**14**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Altogether (for main field of study blocks):

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
8	**0**	**8**	**6**	**1**	**345**	**575**	**23**	**19**	**16,1**

4.2 List of optional blocks

4.2.1 List of general education blocks

4.2.1.2 *Foreign languages* block *(min. 3 ECTS points):*

No.	Subject/ group of classes code	Name of subject/group of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	SJO-SM0003	Foreign Language 1		3				K2_GIG_ U03	45	60	2		1,6	T	Z	O		P (2)	KO
2	SJO-SM0004	Foreign Language 2		1				K2_GIG_U01,U02	15	30	1		0,6	T	Z	O		P(1)	KO
		Total	**0**	**4**	**0**	**0**	**0**		**60**	**90**	**3**		**2,2**					**3**	

Altogether for general education blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
0	**4**	**0**	**0**	**0**	**60**	**90**	**3**	**0**	**2,2**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.2.4 List of specialization blocks

4.2.4.1 *Specialization subjects (e.g. whole specialization)* blocks *(60 ECTS points):*

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol GK)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form2 of course/group of courses	Way3 of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3056G	Modelling of Unit Operations (GK)	2		2			K2_GIG_W01,W06,W18 K2_GIG_U04,U05,U07,U10,U13 K2_GIG_K01,K03	60	125	5	3	2,7	T /Z	Z		DN	P(3)	S
2	W06GIG-SM3057G	Advanced Process Design (GK)	2	1		2		K2_GIG_W02,W06,W07,W08,W10,W11,W14 K2_GIG_U04,U05,U07,U09,U10,U13,U15 K2_GIG_K01,K03	75	125	5	3	3,6	T /Z	Z		DN	P(4)	S
3	W06GIG-SM3058G	Research Methodology (GK)	1	1		2		K2_GIG_W03,W05,W07,W08,W10, W14,W15,W16,W18 K2_GIG_U04,U07,U09,U10,U13,U15 K2_GIG_K01,K02,K03	60	125	5	3	3,1	T /Z	Z		DN	P(4)	S
4	W06GIG-SM3059G	Circular Economy for Materials Processing (GK)	1			2	1	K2_GIG_W02,W03,W04,W05,W08,W11,W12,W13 K2_GIG_U04,U08,U09,U10,U12,U13 K2_GIG_K03	60	125	5	3	3,2	T/Z	E(w), Z (pr, sem)		DN	P(4)	S
5	W06GIG-SM3060G	Technology and Innovation Management Introduction (GK)	1	2				K2_GIG_W03,W05,W07,W09,W10,W13,W18 K2_GIG_U04,U05,U06,U10,U13,U15 K2_GIG_K01,K02,K03	45	75	3	2	2,3	T/Z	E(w) Z(cl)		DN	P(2)	S
6	W06GIG-SM3061G	Solid-Liquid Separation (GK)	1	1	2			K2_GIG_W01,W02,W07,W08,W18 K2_GIG_U04,U08,U10 K2_GIG_K03	60	100	4	3	3	T/Z	E(w) Z(cl, lab)		DN	P(3)	S
7	GIG-SM2004ANG	Elective subjects Block I	1			2		K2_GIG_W01,W03,W08,W18 K2_GIG_U04,U07,U00,U10,U13 K2_GIG_K01,K03	45	75	3	2	2,3	T/Z	Z		DN	P(2)	S
8	W06GIG-SM3065G	Fluid Dynamics in Chemical Engineering (GK)	1	1		2		K2_GIG_W01,W02,W07, W10 K2_GIG_U01,U04,U07,U13 K2_GIG_K01	60	125	5	3	3	T/Z	Z		DN	P(3)	S
9	W06GIG-SM3066G	Process Intensification (GK)	2	1			1	K2_GIG_W01,W02,W07,W10, K2_GIG_U01,U4,U07,U10,U13 K2_GIG_K01	60	125	5	2	3	T/Z	E(w), Z(cl, pr)		DN	P(3)	S
10	W06GIG-SM3067G	Current Issues in Enabling Technologies for Circular Economy (GK)	1	1		2		K2_GIG_W1,W07, W10,W12 K2_GIG_U01,U04,U10,U12,U13 K2_GIG_K01,K02,K03	60	125	5	4	3	T/Z	Z		DN	P(3)	S

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

11	W06GIG-SM3068G	Start-ups and Venture Formation (GK)	1			2	2	K2_GIG_W1,W02, W10,W18 K2_GIG_U02,U07,U13 K2_GIG_K01	75	150	6	2	3,8	T/Z	E(w), Z(pr,sem)		DN	P(5)	S
12	W06GIG-SM3069G	Academic Entrepreneurship (GK)	1			2	2	K2_GIG_W1,W03,W06,W10 K2_GIG_U01,U04,U05,U06,U12 K2_GIG_K01,K02,K03	75	150	6	3	3,8	T/Z	E(w), Z(pr,sem)		DN	P(5)	S
13	GIG-SM2005ANG	Elective Subjects Block II	1		2			K2_GIG_W1,W02,W18 K2_GIG_U01,U04,U13,U15 K2_GIG_K01	45	75	3	1	2,1	T/Z	Z		DN	P(2)	S
		Total	**16**	**8**	**6**	**16**	**6**		**780**	**1500**	**60**	**43**	**38,9**					**43**	

4.2.4.2 *Diploma (e.g. diploma profile)* block *(21 ECTS points):*

No.	Subject / groups of classescode	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3014S	Diploma Seminar					1	K2_GIG_W01 K2_GIG_U01,U13 K2_GIG_K03	15	25	1	1	0,8	T	Z		DN	P(1)	S
2	W06GIG-SM3015D	Master Thesis				1		K2_GIG_W01,W05,W10 K2_GIG_U01,U04,U08,U10,U13,U15 K2_GIG_K01,K03	15	500	20	20	1,8	T	Z		DN	P (20)	S
		Total	**0**	**0**	**0**	**1**	**1**		**30**	**525**	**21**	**21**	**2,6**					**21**	

Altogether for specialization blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
16	**8**	**6**	**17**	**7**	**810**	**2025**	**81**	**64**	**41,5**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.3 Training block - concerning principles of training crediting – attachment no. …

Opinion of the Advisory Faculty Council concerning the rules of crediting training block

Name of training			
Number of ECTS points	**Number of ECTS points for BU[1] classes**	**Training crediting mode**	**Code**

Training duration	Training objective
	Internship

4.4 „Diploma dissertation" block (*if it is foreseen at first level studies)*

Type of diploma dissertation	Licencjat / inżynier / magister / magister inżynier*	
Number of diploma dissertation semesters	**Number of ECTS points**	**Code**
1	**20**	
Character of diploma dissertation		
Literature survey, project, computer program, etc.		
Number of BU[1] ECTS points	**1,8**	

5. Ways of verifying assumed learning outcomes

Form of classes	Ways of verifying assumed learning outcomes
lecture	e.g. examination, progress/final test
class	e.g. progress/final test
laboratory	e.g. pretest, report from laboratory
project	e.g. project defence
seminar	e.g. participation in discussion, topic presentation, essay
training	e.g. report from training
diploma dissertation	prepared diploma dissertation

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

6. Range of diploma examination

1. Occupational risk assessment methods. Identification of harmful, dangerous, and nuisance factors in the work environment.
2. Costs as the subject of cost accounting. Variable and fixed costs. Break-even point.
3. Capital budgeting, evaluation of different methods
4. Liquidity vs profitability of a company. Ways of their evaluation
5. Environmental management systems
6. Characteristics of hazards for the natural environment resulting from human activities
7. Variogram and methods of its modelling
8. Kriging, its properties and types
9. Geophysical methods for environmental and engineering problems.
10. Modelling of unit operations.
11. Computer-aided exploration and identification of deposits.
12. Decision models used in management.
13. Advances in technology and methods of future mining operations.
14. Aims, benefits, and drawbacks of automation and industrial revolutions.
15. Applications of Interferometric Synthetic Aperture Radar.
16. Applications of map algebra and spatial statistics to determine surface deformation models.
17. Geological criteria in the exploration of mineral deposits
18. Calculation of mineral reserves
19. Examples of appropriate level of site investigations for the purpose of different types of studies and projects in geotechnical engineering.
20. Examples of potential geotechnical problems in different rock types in geotechnical engineering.
21. Application of remote sensing in mineral exploration.
22. Characteristics of electromagnetic radiation for the purposes of remote sensing of mineral resources.
23. Applications of GIS software in mineral exploration.
24. Types of deposits of industrial minerals.
25. The most important analytical methods applied in mineral processing.
26. Mining legislation. Categorization and classification of mineral reserves.
27. Groundwater chemistry and its impact on water use and legislation.
28. Hydrogeological objects (wells, piezometers), construction and use.
29. Research methodology
30. Advanced process design
31. The modifying factors that affect the conversion of mineral resources to mineral reserves
32. The importance of different strategies for grade control and mine mapping in operating mines

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

33. Basic geochemical processes that control geochemical anomalies and their application during exploration
34. Technology and innovation management.
35. Circular economy for materials processing.
36. Fluid dynamics in chemical engineering.
37. Process intensification.
38. Current issues in enabling technologies for circular economy.
39. Start-ups and venture formation.
40. Academic entrepreneurship.
41. Intelligent product service systems.
42. Inventive product design and advanced TRIZ.
43. Definitions of terms: ore mineral and industrial mineral. Classifications of industrial minerals.

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

7. Requirements concerning deadlines for crediting subject/groups of subject for all courses in particular blocks

No.	Subject / group of classes code	Name of subject / group of classes	Crediting by deadline of... (number of semester)
1	W06GIG-SM3056G	Modelling of Unit Operations	1-4
2	W06GIG-SM3057G	Advanced Process Design	1-4
3	W06GIG-SM3058G	Research Methodology	1-4
4	W06GIG-SM3059G	Circular Economy for Materials Processing	1-4
5	GIG-SM2004ANG	Elective Subjects Block I	1-4
6	W06GIG-SM3060G	Technology and Innovation Management Introduction	1-4
7	W06GIG-SM3061G	Solid-Liquid Separation	1-4
8	W06GIG-SM3065G	Fluid Dynamics in Chemical Engineering	2-4
9	W06GIG-SM3066G	Process Intensification	2-4
10	W06GIG-SM3067G	Current Issues in Enabling Technologies for Circular Economy	2-4
11	W06GIG-SM3068G	Start-ups and Venture Formation	2-4
12	W06GIG-SM3069G	Academic Entrepreneurship	2-4
13	GIG-SM2005ANG	Elective Subjects Block II	2-4
14	W06GIG-SM3007	Principles and Application of InSAR and GIS in Mining	3-4
15	W06GIG-SM3002	Computer-Aided Geological Modelling and Geostatistics	3-4
16	W06GIG-SM3003G	Project Management, Appraisal and Risk Evaluation	3-4
17	W06GIG-SM3004	Engineering Geophysics	3-4
18	W06GIG-SM3001	Environmental Management	3-4
19	W06GIG-SM3005	Occupational Health and Safety	3-4
20	SJO-SM0003	Foreign language 1	3-4
21	SJO-SM0004	Foreign language 2	3-4
22	W06GIG-SM3006	Digital Mine	3-4
23	W06GIG-SM3000	Operations Research	3-4
24	W06GIG-SM3062P	Industrial Research Internship Project	1-4
25	W06GIG-SM3064P	Field Academy Student Project	1-4
26	W06GIG-SM3063G	Integrated Analysis of Deformations in Geomechanical Engineering	4
27	W06GIG-SM3014S	Master Thesis	4
28	W06GIG-SM3015D	Diploma Seminar	4

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

8. Plan of studies (attachment no. 3 to the Program of Studies)

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Approved by faculty student government legislative body:

POLITECHNIKA WROCŁAWSKA
WYDZIAŁ GEOINŻYNIERII
GÓRNICTWA I GEOLOGII
Samorząd Studencki Wydziału Geoinżynierii,
Górnictwa i Geologii
50-421 Wrocław, Na Grobli 15, pokój 370

08.11.2023

.....

Date

Jakub Dobrzański

.....

Jakub Dobrzański
Chairman of the Student Government
of the Faculty of Geoengineering, Mining and Geology
name and surname, signature of student representative

08.11.2023

.....

Date

DZIEKAN
prof. dr hab. inż. Radosław Zimroz

.....

Dean's signature

Zał. nr 4 do ZW 78/2023
Attachment no. 3 to Program of Studies

PLAN OF STUDIES

FACULTY OF GEOENGINEERING, MINING AND GEOLOGY

MAIN FIELD OF STUDY: Mining and geology

EDUCATION LEVEL: second-level studies

FORM OF STUDIES: full-time studies

PROFILE: general academic

SPECIALIZATION: Entrepreneurship, Innovation and Technology Integration in Mining – Track LUT - WUST

LANGUAGE OF STUDY: English

In effect since academic year 2024/2025

Studies' plan structure (optional)
1) in ECTS format

	Winter		Summer		Winter		Summer	
semester	**1**	**ECTS**	**2**	**ECTS**	**3**	**ECTS**	**4**	**ECTS**
hours	LUT		LUT		WUST		WUST	
1	Modelling of Unit Operations 20200Z W06GIG-SM3056G	5	Fluid Dynamics in Chemical Engineering 11020Z W06GIG-SM3065G	5	Operations Research 10100Z W06GIG-SM3000	3	Industrial Research Internship Project 00020Z W06GIG-SM3062P	2
2								
3					Environmental Management 20001Z W06GIG-SM3001	3	Integrated Analysis of Deformations in Geomechanical Engineering 20200E W06GIG-SM3063G	5
4								
5	Advanced Process Design 21020Z W06GIG-SM3057G	5	Process Intensification 21001E W06GIG-SM3066G	5	Computer-Aided Geological Modelling & Geostatistics 10300Z W06GIG-SM3002	5		
6								
7								
8							Diploma Seminar 00001Z W06GIG-SM3014S	1
9			Current Issues in Enabling Technologies for Circular Economy 11020Z W06GIG-SM3067G	5			Master Thesis 00010Z W06GIG-SM3015D	20
10	Research Methodology 11020Z W06GIG-SM3058G	5			Project Management, Appraisal and Risk Evaluation 10210E W06GIG-SM3003G	4		
11								
12								
13			Start-ups and Venture Formation 10022E W06GIG-SM3068G	6				
14	Circular Economy for Materials Processing 10021E W06GIG-SM3059G	5			Engineering Geophysics 10010 Z W06GIG-SM3004	3	Field Academy Student Project 00030Z W06GIG-SM3064P	2
15								
16					Occupational Health and Safety 100100Z W06GIG-SM3005	2		
17								
18	Elective Subjects Block I 10020Z GIG-SM2004ANG	3	Academic Entrepreneurship 10022E W06GIG-SM3069G	6	Foreign Language 1 03000 Z SJO-SM0003	2		
19								
20								
21	Technology and Innovation Management Introduction 12000E W06GIG-SM3060G	3			Digital Mine 10100 Z W06GIG-SM3006	2		
22								
23			Elective Subjects Block II 10020Z GIG-SM2005ANG	3	Principles and Application of InSAR and GIS in Mining 20300E W06GIG-SM3007	5		
24	Solid-Liquid Separation 11200E W06GIG-SM3061G	4						
25								
26								
27								
28					Foreign Language 2 01000 Z SJO-SM0004	1		
Total ECTS		**30**		**30**		**30**		**30**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

1. Set of obligatory and optional subjects and groups of classes in semestral arrangement

Semester 1

Obligatory subjects / groups of classes (0 ECTS points)

No.	Subject / groups of classescode	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
		Total																	

Optional subjects / groups of classes Number of ECTS points 30

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol GK)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form2 of course/group of courses	Way3 of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3056G	Modelling of Unit Operations (GK)	2		2			K2_GIG_W01,W06,W18 K2_GIG_U04,U05,U07,U10,U13 K2_GIG_K01,K03	60	125	5	3	2,7	T/Z	Z		DN	P(3)	S
2	W06GIG-SM3057G	Advanced Process Design (GK)	2	1		2		K2_GIG_W02,W06,W07,W08,W10,W11,W14 K2_GIG_U04,U05,U07,U09,U10,U13,U15 K2_GIG_K01,K03	75	125	5	3	3,6	T /Z	Z		DN	P(4)	S
3	W06GIG-SM3058G	Research Methodology (GK)	1	1		2		K2_GIG_W03,W05,W07,W08,W10,W14,W15,W16,W18 K2_GIG_U04,U07,U09,U10,U13,U15 K2_GIG_K01,K02,K03	60	125	5	3	3,1	T /Z	Z		DN	P(4)	S
4	W06GIG-SM3059G	Circular Economy for Materials Processing (GK)	1			2	1	K2_GIG_W02,W03,W04,W05,W08,W11,W12,W13 K2_GIG_U04,U08,U09,U10,U12,U13 K2_GIG_K03	60	125	5	3	3,2	T/Z	E(w), Z (pr, sem)		DN	P(4)	S
5	W06GIG-SM3060G	Technology and Innovation Management Introduction (GK)	1	2				K2_GIG_W03,W05,W07,W09,W10,W13,W18 K2_GIG_U04,U05,U06,U10,U13,U15 K2_GIG_K01,K02,K03	45	75	3	2	2,3	T/Z	E(w) Z(cl)		DN	P(2)	S
6	W06GIG-SM3061G	Solid-Liquid Separation (GK)	1	1	2			K2_GIG_W01,W02,W07,W08,W18 K2_GIG_U04,U08,U10 K2_GIG_K03	60	100	4	3	3	T/Z	E(w) Z(cl, lab)		DN	P(3)	S
7	GIG-SM2004ANG	Elective subjects Block I	1			2		K2_GIG_W01,W03,W08,W18 K2_GIG_U04,U07,U00,U10,U13 K2_GIG_K01,K03	45	75	3	2	2,3	T /Z	Z		DN	P(2)	S
		Total	**9**	**5**	**4**	**8**	**1**		**405**	**750**	**30**	**19**	**20,2**					**22**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
9	**5**	**4**	**8**	**1**	**405**	**750**	**30**	**19**	**20,2**

Semester 2

Obligatory subjects / groups of classes (0 ECTS points)

No.	Subject / groups of classescode	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1																			
		Total																	

Optional subjects / groups of classes Number of ECTS points 30

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3065G	Fluid Dynamics in Chemical Engineering (GK)	1	1		2		K2_GIG_W01,W02,W07, W10 K2_GIG_U01,U04,U07,U13 K2_GIG_K01	60	125	5	3	3	T/Z	Z		DN	P(3)	S
2	W06GIG-SM3066G	Process Intensification (GK)	2	1			1	K2_GIG_W01,W02,W07,W10, K2_GIG_U01,U4,U07,U10,U13 K2_GIG_K01	60	125	5	2	3	T/Z	E(w), Z(cl, pr)		DN	P(3)	S
3	W06GIG-SM3067G	Current Issues in Enabling Technologies for Circular Economy (GK)	1	1		2		K2_GIG_W1,W07, W10,W12 K2_GIG_U01,U04,U10,U12,U13 K2_GIG_K01,K02,K03	60	125	5	4	3	T/Z	Z		DN	P(3)	S
4	W06GIG-SM3068G	Start-ups and Venture Formation (GK)	1			2	2	K2_GIG_W1,W02, W10,W18 K2_GIG_U02,U07,U13 K2_GIG_K01	75	150	6	2	3,8	T/Z	E(w), Z(pr,sem)		DN	P(5)	S
5	W06GIG-SM3069G	Academic Entrepreneurship (GK)	1			2	2	K2_GIG_W1,W03,W06,W10 K2_GIG_U01,U04,U05,U06,U12 K2_GIG_K01,K02,K03	75	150	6	3	3,8	T/Z	E(w), Z(pr,sem)		DN	P(5)	S
6	GIG-SM2005ANG	Elective Subjects Block II	1		2			K2_GIG_W1,W02,W18 K2_GIG_U01,U04,U13,U15 K2_GIG_K01	45	75	3	1	2,1	T/Z	Z		DN	P(2)	S
		Total	**7**	**3**	**2**	**8**	**5**		**375**	**750**	**30**	**24**	**18,7**					**21**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
7	**3**	**2**	**8**	**5**	**375**	**750**	**30**	**24**	**18,7**

Semester 3

Obligatory subjects / groups of classes Number of ECTS points 27

No.	Subject / groups of classescode	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3000W	Operations Research	1					K2_GIG_W06	15	25	1	1	0,8	T /Z	Z		DN		KO
2	W06GIG-SM3000L	Operations Research			1			K2_GIG_U10,U14 K2_GIG_K01	15	50	2	2	0,7	T	Z		DN	P (2)	KO
3	W06GIG-SM3002W	Computer-Aided Geological Modelling & Geostatistics	1					K2_GIG_W06,W08,W15	15	50	2		0,8	T /Z	Z		DN		PD/K
4	W06GIG-SM3002L	Computer Aided Geological Modelling & Geostatistics			3			K2_GIG_U04,U08,U14	45	75	3	2	1,9	T	Z		DN	P (3)	PD/K
5	W06GIG-SM3003G	Project Management, Appraisal and Risk Evaluation (GK)	1		2	1		K2_GIG_W03,W05,W11 K2_GIG_U04,U06,U08,U15 K2_GIG_K01	60	100	4	4	3,1	T/Z(w)	E(w), Z(l,p)		DN	P (3)	KO
6	W06GIG-SM3001W	Environmental Management	2					K2_GIG_W04,W12,W13,W18	30	50	2	2	1,3	T /Z(w)	Z		DN		K
7	W06GIG-SM3001S	Environmental Management					1	K2_GIG_U05,U10,U11 K2_GIG_K02,K03	15	25	1	1	0,8	T	Z		DN	P(1)	K
8	W06GIG-SM3004W	Engineering Geophysics	1					K2_GIG_W02,W08,W10	15	25	1	1	0,8	T /Z	Z		DN		PD
9	W06GIG-SM3004P	Engineering Geophysics				1		K2_GIG_U04,U13	15	50	2	2	0,9	T	Z		DN	P(2)	PD
10	W06GIG-SM3007W	Principles and Application of InSAR and GIS in mining	2					K2_GIG_W15,W16,W18	30	50	2	2	1,4	T/Z(w)	E		DN		K
11	W06GIG-SM3007L	Principles and Application of InSAR and GIS in mining			3			K2_GIG_U04,U07,U08	45	75	3	3	2,0	T	Z		DN	P(3)	K
12	W06GIG-SM3005W	Occupational Health and Safety	1					K2_GIG_W11,W12,W14,W17	15	25	1	1	0,7	T /Z(w)	Z		DN		K
13	W06GIG-SM3005P	Occupational Health and Safety				1		K2_GIG_U11, K2_GIG_K02, K03	15	25	1	1	0,8	T	Z		DN	P(1)	K
14	W06GIG-SM3006W	Digital Mine	1					K2_GIG_W07,W12,W18,W19	15	25	1	1	0,8	T /Z(w)	Z		DN		K
15	W06GIG-SM3006L	Digital Mine			1			K2_GIG_U04,U07,U08	15	25	1	1	0,8	T	Z		DN	P(1)	K
		Total	**10**	**0**	**10**	**3**	**1**		**360**	**675**	**27**	**24**	**17,6**					**16**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Optional subjects / groups of classes (3 ECTS points)

No.	Subject / groups of classescode	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	SJO-SM0003	Foreign Language 1		3				K2_GIG_ U03	45	60	2		1,6	T	Z	O		P(2)	KO
2	SJO-SM0004	Foreign Language 2		1				K2_GIG_U01,U02	15	30	1		0,6	T	Z	O		P(1)	KO
		Total	**0**	**4**	**0**	**0**	**0**		**60**	**90**	**3**	**0**	**2,2**					**3**	

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
10	**4**	**10**	**3**	**1**	**420**	**765**	**30**	**24**	**19,8**

Semester 4

Obligatory subjects / groups of classes Number of ECTS points 9

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3063G	Integrated Analysis of Deformations in Geomechanical Engineering (GK)	2		2			K2_GIG_W07,W09,W10,W16, W18 K2_GIG_U04,U07,U10,U15 K2_GIG_K01,K02,K03	60	125	5	4	2,9	T/Z	E(w)		DN	P(2)	K
2	W06GIG-SM3062P	Industrial Research Internship Project				2		K2_GIG_W05,W07,W09,W14 K2_GIG_U04,U09,U10,U13 K2_GIG_K01,K02,K03	30	50	2		1,5	T/Z	Z		DN	P(2)	S
3	W06GIG-SM3064P	Field Academy Student Project				3		K2_GIG_W08,W09,W14,W15 K2_GIG_U04,U07,U09,U10,U13 K2_GIG_K02	45	50	2	1	1,8	T/Z	Z		DN	P(2)	S
		Total	**2**	**0**	**2**	**5**	**0**		**135**	**225**	**9**	**5**	**6,2**					**6**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Optional subjects / groups of classes (21 ECTS points)

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical [6]	Type[7]
1	W06GIG-SM3014S	Diploma Seminar					1	K2_GIG_W01 K2_GIG_U01,U13 K2_GIG_K02,K03	15	25	1	1	0,8	T	Z		DN	P(1)	S
2	W06GIG-SM3015D	Master Thesis				1		K2_GIG_W01,W05,W10 K2_GIG_U01,U04,U08,U10,U13,U15 K2_GIG_K01,K02,K03	15	500	20	20	1,8	T	Z		DN	P (20)	S
		Total	**0**	**0**	**0**	**1**	**1**		**30**	**525**	**21**	**21**	**2,6**					**21**	

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
2	**0**	**2**	**6**	**1**	**165**	**750**	**30**	**26**	**8,8**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2. Set of examinations in semestral arrangement

Subjects / groups of classes	Names of subjects / groups of classes ending with examination	Semester
W06GIG-SM3059G	1. Circular Economy for Materials Processing	1
W06GIG-SM3060G	2. Technology and Innovation Management Introduction	1
W06GIG-SM3061G	3. Solid-Liquid Separation	1
W06GIG-SM3066G	1. Process Intensification	2
W06GIG-SM3068G	2. Start-ups and Venture Formation	2
W06GIG-SM3069G	3. Academic Entrepreneurship	2
W06GIG-SM3003G	1. Project Management, Appraisal and Risk Evaluation	3
W06GIG-SM3007	2. Principles and Applications of InSAR in Mining	3
W06GIG-SM3063G	1. Integrated Analysis of Deformations in Geomechanical Engineering	4
	2. Final diploma examination	4

3. Numbers of allowable deficit of ECTS points after particular semesters

Semester	Allowable deficit of ECTS points after semester
1	12
2	8
3	0

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Opinion of Student Government legislative body

08.11.2023

.....

Date

POLITECHNIKA WROCŁAWSKA
WYDZIAŁ GEOINŻYNIERII
GÓRNICTWA I GEOLOGII
Samorząd Studencki Wydziału Geoinżynierii,
Górnictwa i Geologii
50-421 Wrocław, Na Grobli 15, pokój 370

Jakub Dobrzański

.....

Jakub Dobrzański
Chairman of the Student Government
of the Faculty of Geoengineering, Mining and Geology
name and surname, signature of student representative

08.11.2023

.....

Date

DZIEKAN
prof. dr hab. inż. Radosław Zimroz

.....

Dean's signature

FACULTY: **Geoengineering, Mining and Geology**

MAIN FIELD OF STUDY: **Mining and Geology**

LANGUAGE OF STUDY: English

SPECIALIZATION: **Entrepreneurship, Innovation and Technology Integration in Mining – Track WUST - LUT**

Zał. nr 3 do ZW 78/2023

Attachment no. 2. to the Program of Studies

DESCRIPTION OF THE PROGRAM OF STUDIES

Main field of study: Mining and Geology
Level of studies: second level studies
Profile: general academic
Form of studies: full-time studies

1. General description

1.1 Number of semesters: 4	*1.2 Total number of ECTS points necessary to complete studies at a given level: 120*
1.3 Total number of hours: 1365	*1.4 Prerequisites (particularly for second-level studies): Bachelor of Science in Engineering diploma, interview*
1.5 Upon completion of studies graduate obtains professional degree of: magister inżynier	*1.6 Graduate profile, employability:* *The program will train the new T-shaped generation of engineers, technologists, and entrepreneurs who understand the whole raw materials value chain (from the prospection and exploration stages, mining, mineral processing, metallurgy, and up to delivering products to customers), and have the ability to integrate innovations and new technologies (e.g. digitalization) into modern and feasible business solutions with high impact on the industry.* *The specialists will have in-depth practice knowledge of technologies entering the raw materials sector gained through industrial experts' mentoring. Innovation and technology integration have become the backbone of the industry's development. By integrating innovation, technology, creativity, and entrepreneurship, the graduates will be able to transform real problems into research challenges and generate innovative ideas and strategies with the entrepreneurial vision.* *Graduates of the program will be prepared to participate actively in the undergoing transformation of the mining sector, through a sound practical knowledge of the latest*

	technologies, and the ability to integrate innovation and new technologies into feasible business. The Graduates will understand technical, business, social, and economic aspects and, therefore, stimulate their technological innovation and technology integration capacities. *The Graduates will be fully qualified to work for: mining and metallurgical companies, EU bodies (raw materials and industry), investment banks (raw materials sector), venture capital (raw materials sector), national/regional government agencies, engineering and consulting firms, knowledge institutions, research institutes and think-tanks as well as a freelanced technologist, specialist and entrepreneur. They will be prepared to work in an international and intercultural environment.*
1.7 Possibility of continuing studies: *Eligibility to apply for admission to a doctoral school, non-degree postgraduate programs*	*1.8 Indicate connection with the University's mission and its development strategy:* *The study programs of all specializations within the field of study Mining and Geology respond to the strategic goals of the University (Strategia Politechniki Wrocławskiej 2023–2030), by raising the level of correlation of the study offer with the needs of the market (C3), by enhancing the quality of education through didactic interdisciplinarity and by cooperation with industrial partners as well as increasing the level of entrepreneurship, creativity and involvement of students in research processes (C4, C2). Graduates of the faculty should be creative and professional, have theoretical background and practical abilities, as well as have interpersonal skills and cross-cultural experience (C5).* *The Faculty of Geoengineering, Mining and Geology, as one of the units of the Wrocław University of Science and Technology, educates in the field of engineering, broadened by knowledge in natural and economic sciences. The profile and quality of education are at the international level and are adapted to the needs of the national and global mineral industries.*

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2. Detailed description

2.1 Total number of learning outcomes in the program of study: W (knowledge) = 19, U (skills) = 15, K (competences) = 3, W + U + K = 37

~~**2.2 For the main field of study assigned to more than one discipline - the number of learning outcomes assigned to the discipline:**~~

~~**D1 (major) ..... (this number must be greater than half the total number of learning outcomes)**~~

~~**D2 .....**~~

~~**D3 .....**~~

~~**D4 .....**~~

~~**2.3 For the main field of study assigned to more than one discipline - percentage share of the number of ECTS points for each discipline:**~~

~~**D1 .....% ECTS points**~~

~~**D2 .....% ECTS points**~~

~~**D3 .....% ECTS points**~~

~~**D4 .....% ECTS points**~~

2.4a. For the general academic profile of the main field of study – the number of ECTS points assigned to the classes related to the University's academic activity in the discipline or disciplines to which the main field of study is assigned – DN (must be greater than 50% of the total number of ECTS points from 1.2) 93 ECTS

2.4b. ~~For the practical profile of the main field of study - the number of ECTS points assigned to the classes shaping practical skills (must be greater than 50% of the total number of ECTS points from 1.2)~~

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2.5 Concise analysis of compliance of the assumed learning outcomes with the needs of the labor market

The economic development of the country is closely dependent on natural resources, the ability to use them, and having an appropriate engineering workforce. The assumed learning outcomes correspond to the needs of practice in the field of the generally understood management of mineral resources - technologies and techniques for their identification, valuation, extraction, processing, revitalization of industrial areas, and the practice of managing an enterprise (especially mining) in the sense of managing information, environment, and people, using the latest IT and marketing techniques and methods. This integration of economic needs and assumed educational effects favorably shape the labor market for the graduates of the Faculty. Additionally, a good command of English and experience working in an international group will open up the possibility of working in foreign branches of Polish enterprises and in foreign companies.

2.6. The total number of ECTS points that a student must obtain in classes requiring direct participation of academic teachers or other persons conducting classes and students (enter the sum of ECTS points for courses/groups of courses marked with the BU[1] code) **67,5 ECTS**

2.7. Total number of ECTS points, which student has to obtain from basic sciences classes

Number of ECTS points for obligatory subjects	6
Number of ECTS points for optional subjects	0
Total number of ECTS points	6

2.8. Total number of ECTS points, which student has to obtain from practical classes, including project and laboratory classes (enter total number of ECTS points for courses/group of courses denoted with code P)

Number of ECTS points for obligatory subjects	22
Number of ECTS points for optional subjects	67
Total number of ECTS points	89

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2.9. Minimum number of ECTS points, which student has to obtain doing education blocks offered as part of University-wide classes or other main field of study (enter number of ECTS points for courses/groups of courses denoted with code O)

3 ECTS points

2.10. Total number of ECTS points, which student may obtain doing optional blocks (min. 30% of total number of ECTS points)

84 ECTS points

3. Description of the process leading to learning outcomes acquisition:

1. Upon starting classes in each subject, the student has an appropriate level of knowledge and skills that constitute the prerequisites for a given course (it is verified by the teacher or the dean's office).
2. The student participates in classes organized at the university.
3. The student carries out the assigned work in class and at home (projects, computational tasks, analyzes, and prepares presentations) and studies the literature and materials recommended by the teacher.
4. The student uses the appointed hours of the tutor's consultation, explaining his uncertainties and verifying the correct understanding of the course content.
5. The student participates in periodic tests of knowledge and skills, completes the tests available on the e-portal, and is familiar with the correct answers, grades, and comments from the teacher.
6. In some subjects, the student participates in group tasks, taking part in the organization of the group's work, assessing the activities of individual participants, and taking responsibility for the result of the group's work.
7. The student is encouraged to become involved in the work of research clubs, student organizations, discussion clubs, and sports groups, and participate in social life through work in public welfare organizations, and voluntary work, thus gaining valuable interpersonal skills and social competencies.
8. The student participates in meetings with companies from the industry, technical excursions, and job fairs, and tries to gain knowledge about the labor market and additional advantages when applying for a job
9. The student is encouraged to participate in an international student exchange, and through contact with foreigners at the faculty, he or she acquires additional interpersonal, cultural, and language qualifications.

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4. List of education blocks:

4.1. List of obligatory blocks:

4.1.1 List of general education blocks

4.1.1.1 *Liberal-managerial subjects* block *(7 ECTS points):*

No.	Subject/ group of classes code	Name of subject/group of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3003G	Project Management, Appraisal and Risk Evaluation (GK)	1		2	1		K2_GIG_W03,W05,W11 K2_GIG_U04,U06,U08,U15 K2_GIG_K01	60	100	4	4	3,1	T/Z(w)	E(w), Z(l,p)		DN	P (3)	KO
2	W06GIG-SM3000W	Operations Research	1					K2_GIG_W06 K2_GIG_U10,U14 K2_GIG_K01	15	25	1	1	0,8	T /Z	Z		DN		KO
3	W06GIG-SM3000L	Operations Research			1				15	50	2	2	0,7	T	Z		DN	P (2)	KO
		Total	**2**	**0**	**3**	**1**	**0**		**90**	**175**	**7**	**7**	**4,6**					**5**	

Altogether for general education blocks

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
2	**0**	**3**	**1**	**0**	**90**	**175**	**7**	**7**	**4,6**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.1.2 List of basic sciences blocks

4.1.2.1 *Mathematics* block

No.	Subject/ group of classes code	Name of subject/group of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3003G	Computer-Aided Geological Modelling & Geostatistics (part: Geostatistics)	1					K2_GIG_W06,W08,W15	15	50	2		0,8	T	Z				PD
2	W06GIG-SM3000W	Computer-Aided Geological Modelling & Geostatistics (part: Geostatistics)			1			K2_GIG_U04,U08,U14	15	25	1		0,6	T	Z			P (1)	PD
		Total	**1**	**0**	**1**	**0**	**0**		**30**	**75**	**3**		**1,4**					**1**	

4.1.2.3 *Physics block*

No.	Subject/ group of classes code	Name of subject/group of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3004W	Engineering Geophysics	1					K2_GIG_W02,W08,W10	15	25	1	1	0,8	T /Z	Z		DN		PD
	W06GIG-SM3004P	Engineering Geophysics				1		K2_GIG_U04,U13	15	50	2	2	0,9	T	Z		DN	P(2)	PD
		Total	**1**	**0**	**0**	**1**	**0**		**30**	**75**	**3**	**3**	**1,7**					**2**	

Altogether for basic sciences blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
2	**0**	**1**	**1**	**0**	**60**	**150**	**6**	**3**	**3,1**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.1.3 List of the main field of study blocks

4.1.3.1 *Obligatory main field of study* blocks

No.	Subject/ group of classes code	Name of subject/group of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3002L	Computer-Aided Geological Modelling & Geostatistics (part: Computer-Aided Geological Modelling)			2			K2_GIG_W06,W08,W15 K2_GIG_U04,U08,U14	30	50	2	2	1,3	T	Z		DN	P(2)	K
2	W06GIG-SM3006W	Digital Mine	1					K2_GIG_W07,W12,W18,W19 K2_GIG_U04,U07,U08	15	25	1	1	0,8	T /Z(w)	Z		DN		K
3	W06GIG-SM3006L	Digital Mine			1				15	25	1	1	0,8	T	Z		DN	P(1)	K
4	W06GIG-SM3005W	Occupational Health and Safety	1					K2_GIG_W11,W12,W14,W17 K2_GIG_U11, K2_GIG_K02, K03	15	25	1	1	0,7	T /Z(w)	Z		DN		K
5	W06GIG-SM3005P	Occupational Health and Safety				1			15	25	1	1	0,8	T	Z		DN	P(1)	K
6	W06GIG-SM3007W	Principles and Application of InSAR and GIS in Mining	2					K2_GIG_W15,W16,W18 K2_GIG_U04,U07,U08	30	50	2	2	1,4	T/Z(w)	E		DN		K
7	W06GIG-SM3007L	Principles and Application of InSAR and GIS in Mining			3				45	75	3	3	2,0	T	Z		DN	P(3)	K
8	W06GIG-SM3001W	Environmental Management	2					K2_GIG_W04,W12,W13,W18 K2_GIG_U05,U10,U11,U12 K2_GIG_K02,K03	30	50	2	2	1,3	T /Z(w)	Z		DN		K
9	W06GIG-SM3001S	Environmental Management					1		15	25	1	1	0,8	T	Z		DN	P(1)	K
10	W06GIG-SM3063G	Integrated Analysis of Deformations in Geomechanical Engineering (GK)	2		2			K2_GIG_W07,W09,W10,W16,W18 K2_GIG_U04,U07,U10,U15 K2_GIG_K01,K02,K03	60	125	5	2	2,9	T/Z	E(w)		DN	P(2)	K
11	W06GIG-SM3062P	Industrial Research Internship Project				2		K2_GIG_W05,W07,W09,W14 K2_GIG_U04,U09,U10,U13 K2_GIG_K01,K02,K03	30	50	2		1,5	T/Z	Z		DN	P(2)	S
12	W06GIG-SM3064P	Field Academy Student Project				3		K2_GIG_W08,W09,W14,W15 K2_GIG_U04,U07,U09,U10,U13 K2_GIG_K02	45	50	2	1	1,8	T/Z	Z		DN	P(2)	S
		Total	**8**	**0**	**8**	**6**	**1**		**345**	**575**	**23**	**19**	**16,1**					**14**	

Altogether (for main field of study blocks):

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
8	**0**	**8**	**6**	**1**	**345**	**575**	**23**	**19**	**16,1**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.2 List of optional blocks

4.2.1 List of general education blocks

4.2.1.2 *Foreign languages* block *(min. 3 ECTS points):*

No.	Subject/ group of classes code	Name of subject/group of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	SJO-SM0003	Foreign Language 1		3				K2_GIG_ U03	45	60	2		1,6	T	Z	O		P (2)	KO
2	SJO-SM0004	Foreign Language 2		1				K2_GIG_U01,U02	15	30	1		0,6	T	Z	O		P(1)	KO
		Total	**0**	**4**	**0**	**0**	**0**		**60**	**90**	**3**		**2,2**					**3**	

Altogether for general education blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
0	**4**	**0**	**0**	**0**	**60**	**90**	**3**	**0**	**2,2**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.2.4 List of specialization blocks

4.2.4.1 *Specialization subjects (e.g. whole specialization)* blocks *(60 ECTS points):*

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol GK)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form2 of course/group of courses	Way3 of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3056G	Modelling of Unit Operations (GK)	2		2			K2_GIG_W01,W06,W18 K2_GIG_U04,U05,U07,U10,U13 K2_GIG_K01,K03	60	125	5	3	2,7	T /Z	Z		DN	P(3)	S
2	W06GIG-SM3057G	Advanced Process Design (GK)	2	1		2		K2_GIG_W02,W06,W07,W08,W10,W11,W14 K2_GIG_U04,U05,U07,U09,U10,U13,U15 K2_GIG_K01,K03	75	125	5	3	3,6	T /Z	Z		DN	P(4)	S
3	W06GIG-SM3058G	Research Methodology (GK)	1	1		2		K2_GIG_W03,W05,W07,W08,W10,W14,W15,W16,W18 K2_GIG_U04,U07,U09,U10,U13,U15 K2_GIG_K01,K02,K03	60	125	5	3	3,1	T /Z	Z		DN	P(4)	S
4	W06GIG-SM3059G	Circular Economy for Materials Processing (GK)	1			2	1	K2_GIG_W02,W03,W04,W05,W08,W11,W12,W13 K2_GIG_U04,U08,U09,U10,U12,U13 K2_GIG_K03	60	125	5	3	3,2	T/Z	E(w), Z (pr, sem)		DN	P(4)	S
5	W06GIG-SM3060G	Technology and Innovation Management Introduction (GK)	1	2				K2_GIG_W03,W05,W07,W09,W10,W13,W18 K2_GIG_U04,U05,U06,U10,U13,U15 K2_GIG_K01,K02,K03	45	75	3	2	2,3	T/Z	E(w) Z(cl)		DN	P(2)	S
6	W06GIG-SM3061G	Solid-Liquid Separation (GK)	1	1	2			K2_GIG_W01,W02,W07,W08,W18 K2_GIG_U04,U08,U10 K2_GIG_K03	60	100	4	3	3	T/Z	E(w) Z(cl, lab)		DN	P(3)	S
7	GIG-SM2004ANG	Elective subjects Block I	1			2		K2_GIG_W01,W03,W08,W18 K2_GIG_U04,U07,U00,U10,U13 K2_GIG_K01,K03	45	75	3	2	2,3	T /Z	Z		DN	P(2)	S
8	W06GIG-SM3065G	Fluid Dynamics in Chemical Engineering (GK)	1	1		2		K2_GIG_W01,W02,W07, W10 K2_GIG_U01,U04,U07,U13 K2_GIG_K01	60	125	5	3	3	T/Z	Z		DN	P(3)	S
9	W06GIG-SM3066G	Process Intensification (GK)	2	1			1	K2_GIG_W01,W02,W07,W10, K2_GIG_U01,U4,U07,U10,U13 K2_GIG_K01	60	125	5	2	3	T/Z	E(w), Z(cl, pr)		DN	P(3)	S
10	W06GIG-SM3067G	Current Issues in Enabling Technologies for Circular Economy (GK)	1	1		2		K2_GIG_W1,W07, W10,W12 K2_GIG_U01,U04,U10,U12,U13 K2_GIG_K01,K02,K03	60	125	5	4	3	T/Z	Z		DN	P(3)	S
11	W06GIG-SM3068G	Start-ups and Venture Formation (GK)	1			2	2	K2_GIG_W1,W02, W10,W18 K2_GIG_U02,U07,U13 K2_GIG_K01	75	150	6	2	3,8	T/Z	E(w), Z(pr,sem)		DN	P(5)	S

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

12	W06GIG-SM3069G	Academic Entrepreneurship (GK)	1			2	2	K2_GIG_W1,W03,W06,W10 K2_GIG_U01,U04,U05,U06,U12 K2_GIG_K01,K02,K03	75	150	6	3	3,8	T/Z	E(w), Z(pr,sem)		DN	P(5)	S
13	GIG-SM2005ANG	Elective Subjects Block II	1		2			K2_GIG_W1,W02,W18 K2_GIG_U01,U04,U13,U15 K2_GIG_K01	45	75	3	1	2,1	T/Z	Z		DN	P(2)	S
		Total	**16**	**8**	**6**	**16**	**6**		**780**	**1500**	**60**	**43**	**38,9**					**43**	

4.2.4.2 *Diploma (e.g. diploma profile)* block *(21 ECTS points):*

No.	Subject/ group of classes code	Name of subject/group of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3014S	Diploma Seminar					1	K2_GIG_W01 K2_GIG_U01,U13 K2_GIG_K03	15	25	1	1	0,8	T	Z		DN	P(1)	S
2	W06GIG-SM3015D	Master Thesis				1		K2_GIG_W01,W05,W10 K2_GIG_U01,U04,U08,U10,U13,U15 K2_GIG_K01,K03	15	500	20	20	1,8	T	Z		DN	P (20)	S
		Total	**0**	**0**	**0**	**1**	**1**		**30**	**525**	**21**	**21**	**2,6**					**21**	

Altogether for specialization blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
16	**8**	**6**	**17**	**7**	**810**	**2025**	**81**	**64**	**41,5**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.3 Training block - concerning principles of training crediting – attachment no. …

Opinion of the Advisory Faculty Council concerning the rules of crediting training block

Name of training			
Number of ECTS points	**Number of ECTS points for BU[1] classes**	**Training crediting mode**	**Code**

Training duration	Training objective
	Internship

4.4 „Diploma dissertation" block (*if it is foreseen at first level studies)*

Type of diploma dissertation	Licencjat / inżynier / magister / magister inżynier*	
Number of diploma dissertation semesters	**Number of ECTS points**	**Code**
1	**20**	**W06GIG-SM3015D**
Character of diploma dissertation		
Literature survey, project, computer program, etc.		
Number of BU[1] ECTS points	**1,8**	

5. Ways of verifying assumed learning outcomes

Form of classes	Ways of verifying assumed learning outcomes
lecture	e.g. examination, progress/final test
class	e.g. progress/final test
laboratory	e.g. pretest, report from laboratory
project	e.g. project defence
seminar	e.g. participation in discussion, topic presentation, essay
training	e.g. report from training
diploma dissertation	prepared diploma dissertation

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

6. Range of diploma examination

1. Occupational risk assessment methods. Identification of harmful, dangerous, and nuisance factors in the work environment.
2. Costs as the subject of cost accounting. Variable and fixed costs. Break-even point.
3. Capital budgeting, evaluation of different methods
4. Liquidity vs profitability of a company. Ways of their evaluation
5. Environmental management systems
6. Characteristics of hazards for the natural environment resulting from human activities
7. Variogram and methods of its modelling
8. Kriging, its properties and types
9. Geophysical methods for environmental and engineering problems.
10. Modelling of unit operations.
11. Computer-aided exploration and identification of deposits.
12. Decision models used in management.
13. Advances in technology and methods of future mining operations.
14. Aims, benefits, and drawbacks of automation and industrial revolutions.
15. Applications of Interferometric Synthetic Aperture Radar.
16. Applications of map algebra and spatial statistics to determine surface deformation models.
17. Geological criteria in the exploration of mineral deposits
18. Calculation of mineral reserves
19. Examples of appropriate level of site investigations for the purpose of different types of studies and projects in geotechnical engineering.
20. Examples of potential geotechnical problems in different rock types in geotechnical engineering.
21. Application of remote sensing in mineral exploration.
22. Characteristics of electromagnetic radiation for the purposes of remote sensing of mineral resources.
23. Applications of GIS software in mineral exploration.
24. Types of deposits of industrial minerals.
25. The most important analytical methods applied in mineral processing.
26. Mining legislation. Categorization and classification of mineral reserves.
27. Groundwater chemistry and its impact on water use and legislation.
28. Hydrogeological objects (wells, piezometers), construction and use.
29. Research methodology
30. Advanced process design
31. The modifying factors that affect the conversion of mineral resources to mineral reserves
32. The importance of different strategies for grade control and mine mapping in operating mines
33. Basic geochemical processes that control geochemical anomalies and their application during exploration

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

34. Technology and innovation management.
35. Circular economy for materials processing.
36. Fluid dynamics in chemical engineering.
37. Process intensification.
38. Current issues in enabling technologies for circular economy.
39. Start-ups and venture formation.
40. Academic entrepreneurship.
41. Intelligent product service systems.
42. Inventive product design and advanced TRIZ.
43. Definitions of terms: ore mineral and industrial mineral. Classifications of industrial minerals.

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

7. Requirements concerning deadlines for crediting courses/groups of courses for all courses in particular blocks

No.	*Subject / group of classes code*	*Name of subject / group of classes*	*Crediting by deadline of... (number of semester)*
1	*W06GIG-SM3007*	*Principles and Application of InSAR and GIS in Mining*	*1-4*
2	*W06GIG-SM3002*	*Computer-Aided Geological Modelling and Geostatistics*	*1-4*
3	*W06GIG-SM3003G*	*Project Management, Appraisal and Risk Evaluation*	*1-4*
4	*W06GIG-SM3004*	*Engineering Geophysics*	*1-4*
5	*W06GIG-SM3001*	*Environmental Management*	*1-4*
6	*W06GIG-SM3005*	*Occupational Health and Safety*	*1-4*
7	*SJO-SM0003*	*Foreign language 1*	*1-4*
8	*SJO-SM0004*	*Foreign language 2*	*1-4*
9	*W06GIG-SM3006*	*Digital Mine*	*1-4*
10	*W06GIG-SM3000*	*Operations Research*	*1-4*
11	*W06GIG-SM3056G*	*Modelling of Unit Operations*	*2-4*
12	*W06GIG-SM3057G*	*Advanced Process Design*	*2-4*
13	*W06GIG-SM3058G*	*Research Methodology*	*2-4*
14	*W06GIG-SM3059G*	*Circular Economy for Materials Processing*	*2-4*
15	*GIG-SM2004ANG*	*Elective Subjects Block I*	*2-4*
16	*W06GIG-SM3060G*	*Technology and Innovation Management Introduction*	*2-4*
17	*W06GIG-SM3061G*	*Solid-Liquid Separation*	*2-4*
18	*W06GIG-SM3065G*	*Fluid Dynamics in Chemical Engineering*	*3-4*
19	*W06GIG-SM3066G*	*Process Intensification*	*3-4*
20	*W06GIG-SM3067G*	*Current Issues in Enabling Technologies for Circular Economy*	*3-4*
21	*W06GIG-SM3068G*	*Start-ups and Venture Formation*	*3-4*
22	*W06GIG-SM3069G*	*Academic Entrepreneurship*	*3-4*
23	*GIG-SM2005ANG*	*Elective Subjects Block II*	*3-4*
24	*W06GIG-SM3062P*	*Industrial Research Internship Project*	*1-4*
25	*W06GIG-SM3064P*	*Field Academy Student Project*	*1-4*
26	*W06GIG-SM3063G*	*Integrated Analysis of Deformations in Geomechanical Engineering*	*4*
27	*W06GIG-SM3014S*	*Master Thesis*	*4*
28	*W06GIG-SM3015D*	*Diploma Seminar*	*4*

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[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

8. Plan of studies (attachment no. 3 to the Program of Studies)

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Approved by faculty student government legislative body:

POLITECHNIKA WROCŁAWSKA
WYDZIAŁ GEOINŻYNIERII
GÓRNICTWA I GEOLOGII
Samorząd Studencki Wydziału Geoinżynierii,
Górnictwa i Geologii
50-421 Wrocław, Na Grobli 15, pokój 370

08.11.2023

.....

Date

Jakub Dobrzański

.....

Jakub Dobrzański
Chairman of the Student Government
of the Faculty of Geoengineering, Mining and Geology
name and surname, signature of student representative

08.11.2023

.....

Date

DZIEKAN
prof. dr hab. inż. Radosław Zimroz

.....

Dean's signature

Zał. nr 4 do ZW 78/2023
Attachment no. 3 to Program of Studies

PLAN OF STUDIES

FACULTY OF GEOENGINEERING, MINING AND GEOLOGY

MAIN FIELD OF STUDY: Mining and geology

EDUCATION LEVEL: second-level studies

FORM OF STUDIES: full-time studies

PROFILE: general academic

SPECIALIZATION: Entrepreneurship, Innovation and Technology Integration in Mining – Track WUST - LUT

LANGUAGE OF STUDY: English

In effect since academic year 2024/2025

Studies' plan structure (optional)
1) in ECTS format

	Summer		Winter		Summer		Winter	
semester	**1**	**ECTS**	**2**	**ECTS**	**3**	**ECTS**	**4**	**ECTS**
hours	WUST		LUT		LUT		WUST	
1	Operations Research 10100Z W06GIG-SM3000	3	Modelling of Unit Operations 20200Z W06GIG-SM3056G	5	Fluid Dynamics in Chemical Engineering 11020Z W06GIG-SM3065G	5	Industrial Research Internship Project 00020Z W06GIG-SM3062P	2
2								
3	Environmental Management 20001Z W06GIG-SM3001	3					Integrated Analysis of Deformations in Geomechanical Engineering 20200E W06GIG-SM3063G	5
4								
5			Advanced Process Design 21020Z W06GIG-SM3057G	5	Process Intensification 21001E W06GIG-SM3066G	5		
6	Computer-Aided Geological Modelling & Geostatistics 10300Z W06GIG-SM3002	5						
7								
8							Diploma Seminar 00001Z W06GIG-SM3014S	1
9					Current Issues in Enabling Technologies for Circular Economy 11020Z W06GIG-SM3067G		Master Thesis 00010Z W06GIG-SM3015D	20
10	Project Management, Appraisal and Risk Evaluation 10210E W06GIG-SM3003G	4	Research Methodology 11020Z W06GIG-SM3058G	5		5		
11								
12								
13					Start-ups and Venture Formation 10022E W06GIG-SM3068G	6		
14	Engineering Geophysics 10010 Z W06GIG-SM3004	3	Circular Economy for Materials Processing 10021E W06GIG-SM3059G	5			Field Academy Student Project 00030Z W06GIG-SM3064P	2
15								
16	Occupational Health and Safety 100100Z W06GIG-SM3005	2						
17								
18	Foreign Language 1 03000Z SJO-SM0003	2	Elective Subjects Block I 10020Z GIG-SM2004ANG	3	Academic Entrepreneurship 10022E W06GIG-SM3069G	6		
19								
20								
21	Digital Mine 10100 Z W06GIG-SM3006	2	Technology and Innovation Management Introduction 12000E W06GIG-SM3060G	3				
22								
23	Principles and Application of InSAR and GIS in Mining 20300E W06GIG-SM3007	5			Elective Subjects Block II 10020Z GIG-SM2005ANG	3		
24			Solid-Liquid Separation 11200E W06GIG-SM3061G	4				
25								
26								
27								
28	Foreign Language 2 01000 Z SJO-SM0004	1						
Total ECTS		**30**		**30**		**30**		**30**

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[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

1. Set of obligatory and optional subjects and groups of classes in semestral arrangement

Semester 1

Obligatory subjects / groups of classes Number of ECTS points 27

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3000W	Operations Research	1					K2_GIG_W06 K2_GIG_U10,U14 K2_GIG_K01	15	25	1	1	0,8	T /Z	Z		DN		KO
2	W06GIG-SM3000L	Operations Research			1				15	50	2	2	0,7	T	Z		DN	P (2)	KO
3	W06GIG-SM3002W	Computer-Aided Geological Modelling & Geostatistics	1					K2_GIG_W06,W08,W15 K2_GIG_U04,U08,U14	15	50	2		0,8	T /Z	Z				PD/K
4	W06GIG-SM3002L	Computer-Aided Geological Modelling & Geostatistics			3				45	75	3	2	1,9	T	Z		DN	P (3)	PD/K
5	W06GIG-SM3003G	Project Management, Appraisal and Risk Evaluation (GK)	1		2	1		K2_GIG_W03,W05,W11 K2_GIG_U04,U06,U08,U15 K2_GIG_K01	60	100	4	4	3,1	T/Z(w)	E(w), Z(l,p)		DN	P (3)	KO
6	W06GIG-SM3001W	Environmental Management	2					K2_GIG_W04,W12,W13,W18 K2_GIG_U05,U10,U11,U12 K2_GIG_K02,K03	30	50	2	2	1,3	T /Z(w)	Z		DN		K
7	W06GIG-SM3001S	Environmental Management					1		15	25	1	1	0,8	T	Z		DN	P(1)	K
8	W06GIG-SM3004W	Engineering Geophysics	1					K2_GIG_W02,W08,W10 K2_GIG_U04,U13	15	25	1	1	0,8	T /Z	Z		DN		PD
9	W06GIG-SM3004P	Engineering Geophysics				1			15	50	2	2	0,9	T	Z		DN	P(2)	PD
10	W06GIG-SM3007W	Principles and Application of InSAR and GIS in Mining	2					K2_GIG_W15,W16,W18 K2_GIG_U04,U07,U08	30	50	2	2	1,4	T/Z(w)	E		DN		K
11	W06GIG-SM3007L	Principles and Application of InSAR and GIS in Mining			3				45	75	3	3	2,0	T	Z		DN	P(3)	K
12	W06GIG-SM3005W	Occupational Health and Safety	1					K2_GIG_W11,W12,W14,W17 K2_GIG_U11, K2_GIG_K02, K03	15	25	1	1	0,7	T /Z(w)	Z		DN		K
13	W06GIG-SM3005P	Occupational Health and Safety				1			15	25	1	1	0,8	T	Z		DN	P(1)	K
14	W06GIG-SM3006W	Digital Mine	1					K2_GIG_W07,W12,W18,W19 K2_GIG_U04,U07,U08	15	25	1	1	0,8	T /Z(w)	Z		DN		K
15	W06GIG-SM3006L	Digital Mine			1				15	25	1	1	0,8	T	Z		DN	P(1)	K
		Total	**10**	**0**	**10**	**3**	**1**		**360**	**675**	**27**	**24**	**17,6**					**16**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Optional subjects / groups of classes (3 ECTS points)

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	SJO-SM0003	Foreign Language 1		3				K2_GIG_ U03	45	60	2		1,6	T	Z	O		P(2)	KO
2	SJO-SM0004	Foreign Language 2		1				K2_GIG_U01,U02	15	30	1		0,6	T	Z	O		P(1)	KO
		Total	**0**	**4**	**0**	**0**			**60**	**90**	**3**	**0**	**2,2**					**3**	

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
10	**4**	**10**	**3**	**1**	**420**	**765**	**30**	**24**	**19,8**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Semester 2

Obligatory subjects / groups of classes (0 ECTS points)

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1																			
		Total																	

Optional subjects / groups of classes Number of ECTS points 30

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol GK)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form2 of course/group of courses	Way3 of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3056G	Modelling of Unit Operations (GK)	2		2			K2_GIG_W01,W06,W18 K2_GIG_U04,U05,U07,U10,U13 K2_GIG_K01,K03	60	125	5	3	2,7	T /Z	Z		DN	P(3)	S
2	W06GIG-SM3057G	Advanced Process Design (GK)	2	1		2		K2_GIG_W02,W06,W07,W08,W10,W11,W14 K2_GIG_U04,U05,U07,U09,U10,U13,U15 K2_GIG_K01,K03	75	125	5	3	3,6	T /Z	Z		DN	P(4)	S
3	W06GIG-SM3058G	Research Methodology (GK)	1	1		2		K2_GIG_W03,W05,W07,W08,W10,W14,W15,W16,W18 K2_GIG_U04,U07,U09,U10,U13,U15 K2_GIG_K01,K02,K03	60	125	5	3	3,1	T /Z	Z		DN	P(4)	S
4	W06GIG-SM3059G	Circular Economy for Materials Processing (GK)	1			2	1	K2_GIG_W02,W03,W04,W05,W08,W11,W12,W13 K2_GIG_U04,U08,U09,U10,U12,U13 K2_GIG_K03	60	125	5	3	3,2	T/Z	E(w), Z (pr, sem)		DN	P(4)	S
5	W06GIG-SM3060G	Technology and Innovation Management Introduction (GK)	1	2				K2_GIG_W03,W05,W07,W09,W10,W13,W18 K2_GIG_U04,U05,U06,U10,U13,U15 K2_GIG_K01,K02,K03	45	75	3	2	2,3	T/Z	E(w) Z(cl)		DN	P(2)	S
6	W06GIG-SM3061G	Solid-Liquid Separation (GK)	1	1	2			K2_GIG_W01,W02,W07,W08,W18 K2_GIG_U04,U08,U10 K2_GIG_K03	60	100	4	3	3	T/Z	E(w) Z(cl, lab)		DN	P(3)	S
7	GIG-SM2004ANG	Elective subjects Block I	1			2		K2_GIG_W01,W03,W08,W18 K2_GIG_U04,U07,U00,U10,U13 K2_GIG_K01,K03	45	75	3	2	2,3	T /Z	Z		DN	P(2)	S
		Total	**9**	**5**	**4**	**8**	**1**		**405**	**750**	**30**	**19**	**20,2**					**22**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
9	**5**	**4**	**8**	**1**	**405**	**750**	**30**	**19**	**20,2**

Semester 3

Obligatory subjects / groups of classes (0 ECTS points)

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1																			
		Total																	

Optional subjects / groups of classes Number of ECTS points 30

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3065G	Fluid Dynamics in Chemical Engineering (GK)	1	1		2		K2_GIG_W01,W02,W07, W10 K2_GIG_U01,U04,U07,U13 K2_GIG_K01	60	125	5	3	3	T/Z	Z		DN	P(3)	S
2	W06GIG-SM3066G	Process Intensification (GK)	2	1			1	K2_GIG_W01,W02,W07,W10, K2_GIG_U01,U4,U07,U10,U13 K2_GIG_K01	60	125	5	2	3	T/Z	E(w), Z(cl, pr)		DN	P(3)	S
3	W06GIG-SM3067G	Current Issues in Enabling Technologies for Circular Economy (GK)	1	1		2		K2_GIG_W1,W07, W10,W12 K2_GIG_U01,U04,U10,U12,U13 K2_GIG_K01,K02,K03	60	125	5	4	3	T/Z	Z		DN	P(3)	S
4	W06GIG-SM3068G	Start-ups and Venture Formation (GK)	1			2	2	K2_GIG_W1,W02, W10,W18 K2_GIG_U02,U07,U13 K2_GIG_K01	75	150	6	2	3,8	T/Z	E(w), Z(pr,sem)		DN	P(5)	S
5	W06GIG-SM3069G	Academic Entrepreneurship (GK)	1			2	2	K2_GIG_W1,W03,W06,W10 K2_GIG_U01,U04,U05,U06,U12 K2_GIG_K01,K02,K03	75	150	6	3	3,8	T/Z	E(w), Z(pr,sem)		DN	P(5)	S
6	GIG-SM2005ANG	Elective Subjects Block II	1		2			K2_GIG_W1,W02,W18 K2_GIG_U01,U04,U13,U15 K2_GIG_K01	45	75	3	1	2,1	T/Z	Z		DN	P(2)	S
		Total	**7**	**3**	**2**	**8**	**5**		**375**	**750**	**30**	**24**	**18,7**					**21**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
7	**3**	**2**	**8**	**5**	**375**	**750**	**30**	**24**	**18,7**

Semester 4

Obligatory subjects / groups of classes Number of ECTS points 9

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3063G	Integrated Analysis of Deformations in Geomechanical Engineering (GK)	2		2			K2_GIG_W07,W09,W10,W16, W18 K2_GIG_U04,U07,U10,U15 K2_GIG_K01,K02,K03	60	125	5	4	2,9	T/Z	E(w)		DN	P(2)	K
2	W06GIG-SM3062P	Industrial Research Internship Project				2		K2_GIG_W05,W07,W09,W14 K2_GIG_U04,U09,U10,U13 K2_GIG_K01,K02,K03	30	50	2		1,5	T/Z	Z		DN	P(2)	S
3	W06GIG-SM3064P	Field Academy Student Project				3		K2_GIG_W08,W09,W14,W15 K2_GIG_U04,U07,U09,U10,U13 K2_GIG_K02	45	50	2	1	1,8	T/Z	Z		DN	P(2)	S
		Total	**2**	**0**	**2**	**5**	**0**		**135**	**225**	**9**	**5**	**6,2**					**6**	

Optional subjects / groups of classes (21 ECTS points)

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3014S	Diploma Seminar					1	K2_GIG_W01 K2_GIG_U01,U13 K2_GIG_K02,K03	15	25	1	1	0,8	T	Z		DN	P(1)	S
2	W06GIG-SM3015D	Master Thesis				1		K2_GIG_W01,W05,W10 K2_GIG_U01,U04,U08,U10,U13,U15 K2_GIG_K01,K02,K03	15	500	20	20	1,8	T	Z		DN	P (20)	S
		Total	**0**	**0**	**0**	**1**	**1**		**30**	**525**	**21**	**21**	**2,6**					**21**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
2	**0**	**2**	**6**	**1**	**165**	**750**	**30**	**26**	**8,8**

2. Set of examinations in semestral arrangement

Subjects / groups of classes	Names of subjects / groups of classes ending with examination	Semester
W06GIG-SM3003G	1. Project Management, Appraisal and Risk Evaluation	1
W06GIG-SM3007	2. Principles and Applications of InSAR in Mining	1
W06GIG-SM3059G	1. Circular Economy for Materials Processing	2
W06GIG-SM3060G	2. Technology and Innovation Management Introduction	2
W06GIG-SM3061G	3. Solid-Liquid Separation	2
W06GIG-SM3066G	1. Process Intensification	3
W06GIG-SM3068G	2. Start-ups and Venture Formation	3
W06GIG-SM3069G	3. Academic Entrepreneurship	3
W06GIG-SM3063G	1. Integrated Analysis of Deformations in Geomechanical Engineering	4
	2. Final diploma examination	4

3. Numbers of allowable deficit of ECTS points after particular semesters

Semester	Allowable deficit of ECTS points after semester
1	12
2	8
3	0

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Opinion of Student Government legislative body

08.11.2023

.....

Date

POLITECHNIKA WROCŁAWSKA
WYDZIAŁ GEOINŻYNIERII
GÓRNICTWA I GEOLOGII
Samorząd Studencki Wydziału Geoinżynierii,
Górnictwa i Geologii
50-421 Wrocław, Na Grobli 15, pokój 370

Jakub Dobrzański

.....

Jakub Dobrzański
Chairman of the Student Government
of the Faculty of Geoengineering, Mining and Geology
name and surname, signature of student representative

08.11.2023

.....

Date

DZIEKAN
prof. dr hab. inż. Radosław Zimroz

.....

Dean's signature

FACULTY: **of Geoengineering, Mining and Geology**

MAIN FIELD OF STUDY: **Mining and Geology**

LANGUAGE OF STUDY: English

SPECIALIZATION: **Mineral Resources Exploration**

- Track UNI MISKOLC-WUST

Zał. nr 3 do ZW 78/2023

Attachment no. 2. to the Program of Studies

DESCRIPTION OF THE PROGRAM OF STUDIES

Main field of study MINING AND GEOLOGY
Profile general academic
Level of studies second level studies
Form of studies full-time studies

1. General description

1.1 Number of semesters: 4	*1.2 Total number of ECTS points necessary to complete studies at a given level: 120*
1.3 Total number of hours: 1290	*1.4 Prerequisites (particularly for second-level studies): Bachelor of Science in Engineering diploma, interview*
1.5 Upon completion of studies graduate obtains *professional degree of: **magister inżynier** - 2nd degree qualifications*	*1.6 Graduate profile, employability:* *The program will train T-shaped earth science specialists having a strong background in classical disciplines of geology and geophysics complemented with modern 3D modelling as well as data processing and interpretation skills, while the boundary-crossing competences will cover skills in innovative mineral exploration techniques and technologies used in the field, in laboratories, in an underground and underwater environment. Students will also be trained in sustainability, social responsibility and social licence to operate. T-shaped mineral explorers will use Industry 4.0-derived tools and methods for mineral resource exploration, mentored by experts.* *They will be prepared to work in enterprises, technical supervision institutions, public state and local administration, in research and development organisations, in Poland and*

	abroad, will also be prepared to start own business or work as free lanced exploration geologists. The graduates will be able to use English freely and will be prepared to work in an international environment and intercultural groups during their professional career.
1.7 Possibility of continuing studies: *eligibility to apply for admission to a doctoral school, non-degree postgraduate programmes*	*1.8 Indicate connection with University's mission and its development strategy:* *The study programs of all specializations within the field of study Mining and Geology respond to the strategic goals of the University (Strategia Politechniki Wrocławskiej 2023–2030), by rising the level of correlation of the study offer with the needs of the market (C3), by enhancing the quality of education through didactic interdisciplinarity and by cooperation with industrial partners as well as increasing the level of entrepreneurship, creativity and involvement of students in research processes (C4, C2). Graduates of the faculty should be creative, professional, have theoretical background and practical abilities, as well as have interpersonal skills and cross-cultural experience (C5).* *The Faculty of Geoengineering, Mining and Geology, as one of the units of the Wrocław University of Science and Technology, educates in the field of engineering, broadened by knowledge in natural and economic sciences. The profile and quality of education are at the international level and are adapted to the needs of the national and global mineral industries.*

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2. Detailed description

2.1 Total number of learning outcomes in the program of study: W (knowledge) = 19, U (skills) = 15, K (competences) = 3, W + U + K = 37

~~**2.2 For the main field of study assigned to more than one discipline - the number of learning outcomes assigned to the discipline:**~~

~~**D1 (major) ..... (this number must be greater than half the total number of learning outcomes)**~~
~~**D2 .....**~~
~~**D3 .....**~~
~~**D4 .....**~~

~~**2.3 For the main field of study assigned to more than one discipline - percentage share of the number of ECTS points for each discipline:**~~

~~**D1 .....% ECTS points**~~
~~**D2 .....% ECTS points**~~
~~**D3 .....% ECTS points**~~
~~**D4 .....% ECTS points**~~

2.4a. For the general academic profile of the main field of study – the number of ECTS points assigned to the classes related to the University's academic activity in the discipline or disciplines to which the main field of study is assigned – DN (must be greater than 50% of the total number of ECTS points from 1.2) 98 ECTS

2.4b. ~~For the practical profile of the main field of study - the number of ECTS points assigned to the classes shaping practical skills (must be greater than 50% of the total number of ECTS points from 1.2)~~

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2.5 Concise analysis of compliance of the assumed learning outcomes with the needs of the labor market

The economic development of the country is closely dependent on natural resources, the ability to use them and having appropriate engineering workforce. The assumed learning outcomes correspond to the needs of practice in the field of the generally understood management of mineral resources - technologies and techniques for their identification, valuation, extraction, processing, revitalization of industrial areas, and the practice of managing an enterprise (especially mining) in the sense of managing information, environment and people, using the latest IT and marketing techniques and methods. This integration of economic needs and assumed educational effects favorably shape the labor market for the graduates of the Faculty. Additionally, a good command of English and experience of working in an international group will open up the possibility of working in foreign branches of Polish enterprises and in foreign companies.

2.6. The total number of ECTS points that a student must obtain in classes requiring direct participation of academic teachers or other persons conducting classes and students (enter the sum of ECTS points for courses / groups of courses marked with the BU[1] code) **63,2 ECTS**

2.7. Total number of ECTS points, which student has to obtain from basic sciences classes

Number of ECTS points for obligatory subjects	6
Number of ECTS points for optional subjects	0
Total number of ECTS points	6

2.8. Total number of ECTS points, which student has to obtain from practical classes, including project and laboratory classes (enter total number of ECTS points for courses/group of courses denoted with code P)

Number of ECTS points for obligatory subjects	18
Number of ECTS points for optional subjects	63
Total number of ECTS points	81

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2.9. Minimum number of ECTS points, which student has to obtain doing education blocks offered as part of University-wide classes or other main field of study (enter number of ECTS points for courses/groups of courses denoted with code O)

3 ECTS points

2.10. Total number of ECTS points, which student may obtain doing optional blocks (min. 30% of total number of ECTS points)

92 ECTS points

3. Description of the process leading to learning outcomes acquisition:

1. Upon starting classes in each subject, the student has an appropriate level of knowledge and skills which constitute the prerequisites for a given course (it is verified by the teacher or the dean's office).
2. The student participates in classes organized at the university.
3. The student carries out the assigned work in class and at home (projects, computational tasks, analyzes, prepares presentations) and studies the literature and materials recommended by the teacher.
4. The student uses the appointed hours of the tutor's consultation, explaining his uncertainties and verifying the correct understanding of the course content.
5. The student participates in periodic tests of knowledge and skills, completes the tests available on the e-portal and is familair with the correct answers, grades and comments from the teacher.
6. In some subjects, the student participates in group tasks, taking part in the organization of the group's work, assessment of the activities of individual participants and takes responsibility for the result of the group's work.
7. The student is encouraged to become involved in the work of research clubs, student organizations, discussion clubs, sports groups, participation in social life through work in public welfare organizations, voluntary work, thus gaining valuable interpersonal skills and social competences.
8. The student participates in meetings with companies from the industry, technical excursions, job fairs, tries to gain knowledge about the labor market and additional advantages when applying for a job
9. The student is encouraged to participate in an international student exchange, and through contact with foreigners at the faculty, he or she acquires additional interpersonal, cultural and language qualifications

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4. List of education blocks:

4.1. List of obligatory blocks:

4.1.1 List of general education blocks

4.1.1.1 *Liberal-managerial subjects* block *(6 ECTS points):*

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3012G	Exploration Entrepreneurship GK	1			1	2	K2_GIG_W03,W05,W09 K2_GIG_U08,U09 K2_GIG_K01,K02,K03	60	100	4		3,0	Z	Z			P(3)	KO
2	W06GIG-SM3013P	SOC Internship				2		K2_GIG_W05,W09 K2_GIG_U08,U09 K2_GIG_K01,K02,K03	30	50	2		1,5	T	Z			P(2)	KO
		Total	**1**			**3**	**2**		**90**	**150**	**6**		**4,5**					**5**	

Altogether for general education blocks

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
1			**3**	**2**	**90**	**150**	**6**		**4,5**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.1.2 List of basic sciences blocks

4.1.2.1 *Mathematics* block

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3002W	Computer Aided Geological Modelling & Geostatistics (część: Geostatistics) w	1					K2_GIG_W06,W08,W15 K2_GIG_U04,U08,U14	15	50	2		0,8	T	Z				PD
2	W06GIG-SM3002L	Computer Aided Geological Modelling & Geostatistics (część: Geostatistics) l			1				15	25	1		0,6	T	Z			P (1)	PD
		Total	**1**	**0**	**1**	**0**	**0**		**30**	**75**	**3**		**1,4**					**1**	

4.1.2.3 *Physics block*

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3004W	Engineering Geophysics w	1					K2_GIG_W02,W08,W10 K2_GIG_U04,U13	15	25	1	1	0,8	T /Z	Z		DN		PD
2	W06GIG-SM3004P	Engineering Geophysics p				1			15	50	2	2	0,9	T	Z		DN	P(2)	PD
		Total	**1**	**0**	**0**	**1**	**0**		**30**	**75**	**3**	**3**	**1,7**					**2**	

Altogether for basic sciences blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
2	**0**	**1**	**1**	**0**	**60**	**150**	**6**	**3**	**3,1**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.1.3 List of the main field of study blocks

4.1.3.1 *Obligatory main field of study* blocks

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3002L	Computer Aided Geological Modelling & Geostatistics (Część: Computer Aided Geological Modelling)			2			K2_GIG_W06,W08,W15 K2_GIG_U04,U08,U14	30	50	2	2	1,3	T	Z		DN	P(2)	K
2	W06GIG-SM3000W	Digital Mine w	1					K2_GIG_W07,W12,W18,W19 K2_GIG_U04,U07,U08	15	25	1	1	0,8	T /Z(w)	Z		DN		K
3	W06GIG-SM3000L	Digital Mine l			1				15	25	1	1	0,8	T	Z		DN	P(1)	K
4	W06GIG-SM3005W	Occupational Health and Safety w	1					K2_GIG_W11,W12,W14,W17 K2_GIG_U11, K2_GIG_K02, K03	15	25	1	1	0,7	T /Z(w)	Z		DN		K
5	W06GIG-SM3005P	Occupational Health and Safety p				1			15	25	1	1	0,8	T	Z		DN	P(1)	K
6	W06GIG-SM3007W	Principles and Application of InSAR and GIS in mining w	2					K2_GIG_W15,W16,W18 K2_GIG_U04,U07,U08	30	50	2	2	1,4	T/Z(w)	E		DN		K
7	W06GIG-SM3007L	Principles and Application of InSAR and GIS in mining l			3				45	75	3	3	2,0	T	Z		DN	P(3)	K
8	W06GIG-SM3055W	Geochemistry	2					K2_GIG_W02,W10 K2_GIG_K03	30	50	2	2	1,4	T /Z(w)	Z	O	DN		PD
9	W06GIG-SM3016P	Applied Field Exploration				3		K2_GIG_W08,W15 K2_GIG_U04,U09,U10,U13 K2_GIG_K02	45	75	3	1	2,1	T	Z		DN	P(3)	S
		Total	**6**	**0**	**6**	**4**			**240**	**400**	**16**	**14**	**11,3**					**10**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Altogether (for main field of study blocks):

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
6	**0**	**6**	**4**	**0**	**240**	**400**	**16**	**14**	**11,3**

4.2 List of optional blocks

4.2.1 List of general education blocks

4.2.1.2 *Foreign languages* block *(min. 3 ECTS points):*

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	SJO-SM0003	Foreign Language 1		3				K2_GIG_ U03	45	60	2		1,6	T	Z	O		P (2)	KO
2	SJO-SM0004	Foreign Language 2		1				K2_GIG_U01,U02	15	30	1		0,6	T	Z	O		P(1)	KO
		Total	**0**	**4**	**0**	**0**	**0**		**60**	**90**	**3**		**2,2**					**3**	

Altogether for general education blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
0	**4**	**0**	**0**	**0**	**60**	**90**	**3**	**0**	**2,2**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.2.4 List of specialization blocks

4.2.4.1 *Specialization subjects (e.g. whole specialization)* blocks *(68 ECTS points):*

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3017G	Physical Geology GK	2			1		K2_GIG_W08,W10 K2_GIG_UU10,U13 K2_GIG_K02,03	45	100	4	4	2,4	T/Z(w)	E		DN	2	S
2	W06GIG-SM3018G	Mineralogy and Geochemistry GK	2		1			K2_GIG_W02,W08,W10 K2_GIG_U08,U10,U13 K2_GIG_K03	45	100	4	4	2,2	T/Z(w)	E		DN	2	S
3	W06GIG-SM3019G	Geophisical Exploration Methods I GK	2		1			K2_GIG_W02,W08,W10 K2_GIG_U07,U10,U13 K2_GIG_K01,K03	45	100	4	4	2,2	T/Z(w)	E		DN	2	S
4	W06GIG-SM3048G	Engineering physics GK	2				1	K2_GIG_W02 K2_GIG_U01, U13 K2_GIG_K02	45	100	4		2,2	T/Z(w)	E			2	S
5	W06GIG-SM3047G	Numerical methods and optimization GK	1		1			K2_GIG_W02,W09 K2_GIG_U04,U13,U14 K2_GIG_K01,K03	30	50	2	2	1,5	T/Z(w)	Z		DN	1	S
6	W06GIG-SM3049G	Geodesy, spatial informatics GK	2				1	K2_GIG_W02,W08,W15,W16 K2_GIG_U04,U10,U13 K2_GIG_K01,K03	45	100	4	4	2,2	T/Z(w)	E		DN	2	S
7	W06GIG-SM3050L	Computer science for engineers			2			K2_GIG_U04,U13 K2_GIG_K01,K03	30	50	2	2	1,4	T	Z		DN	2	S
8	W06GIG-SM3051G	Data and information processing GK	2				1	K2_GIG_W02,W15,W16 K2_GIG_U04,U13 K2_GIG_K01,K03	45	100	4	4	2,1	T/Z(w)	Z		DN	2	S
	W06GIG-SM3031S	Graduate research seminar					2	K2_GIG_W01,W07,W10 K2_GIG_U01,U08,U13 K2_GIG_K02	30	50	2	2	1,4	T/Z(w)	Z		DN	2	S
9	W06GIG-SM3025G	Structural geology GK	1			2		K2_GIG_W02,W08,W10,W15 K2_GIG_U04,U07,U10,U13 K2_GIG_K03	45	100	4	4	2,4	T/Z(w)	E		DN	2	S
10	W06GIG-SM3026G	Mineral Deposits GK	2		1			K2_GIG_W08,W09,W10 K2_GIG_U01,U10,U13 K2_GIG_K03	45	100	4	4	2,2	T/Z(w)	E		DN	2	S
11	W06GIG-SM3027G	Engineering geology and hydrogeology GK	2		1			K2_GIG_W02,W08,W10,W14 K2_GIG_U04,U07U10,U13 K2_GIG_K03	45	100	4	4	2,2	T/Z(w)	E		DN	2	S
12	W06GIG-SM3028G	Analytical technics in mineralogy and petrology GK	1		1			K2_GIG_W02,W08,W10 K2_GIG_U04,U10,U13 K2_GIG_U_K03	30	50	2	2	1,5	T/Z(w)	Z		DN	1	S
13	W06GIG-SM3052G	Geophysical measurements GK	2		1			K2_GIG_W02,W07,W08 K2_GIG_U08,U10,U13	45	100	4	4	2,2	T/Z(w)	E			2	S

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

								K2_GIG_U_K03											
14	W06GIG-SM3030G	Geological mapping GK	1			2		K2_GIG_W08,W10,W11 K2_GIG_U04,U10 K2_GIG_K03	45	100	4	4	2,4	T/Z(w)	E		DN	2	S
16	W06GIG-SM3053G	Historical geology GK	2				1	K2_GIG_W08,W10 K2_GIG_U10,U13 K2_GIG_K02,03	45	100	4	4	2,2	T/Z(w)	E			2	S
17	W06GIG-SM3054G	Geophysical exploration methods II GK	2				1	K2_GIG_W02,W08,W10 K2_GIG_U07,U10,U13 K2_GIG_K01,K03	45	100	4	4	2,2	T/Z(w)	E			2	S
18	GIG-SM0001AN	Free Elective	1						15	25	1		0,7		Z				S
19	W06GIG-SM3056P	Research in Innovative Exploration				6		K2_GIG_W01,W08,W10,W12 K2_GIG_U01,U07,U08,U10,U13 K2_GIG_K01,K02	90	175	7	4	3,9	T	Z		DN	7	S
		Total	**27**	**0**	**9**	**11**	**7**		**810**	**1700**	**68**	**60**	**39,5**					**39**	

4.2.4.2 *Diploma (e.g. diploma profile)* block *(21 ECTS points):*

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3014S	Diploma Seminar					1	K2_GIG_W01 K2_GIG_U01,U13 K2_GIG_K03	15	25	1	1	0,8	T	Z		DN	P(1)	S
2	W06GIG-SM3015D	Master Thesis				1		K2_GIG_W01,W05,W10 K2_GIG_U01,U04, U08,U10,U13,U15 K2_GIG_K01,K03	15	500	20	20	1,8	T	Z		DN	P (20)	S
		Total	**0**	**0**	**0**	**1**	**1**		**30**	**525**	**21**	**21**	**2,6**					**21**	

Altogether for specialization blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
27	**0**	**9**	**12**	**8**	**840**	**2225**	**89**	**81**	**42,1**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.3 Training block - concerning principles of training crediting – attachment no. …

Opinion of the Advisory Faculty Council concerning the rules of crediting training block

Name of training			
Number of ECTS points	**Number of ECTS points for BU[1] classes**	**Training crediting mode**	**Code**

Training duration	Training objective
	Internship

4.4 „Diploma dissertation" block (*if it is foreseen at first level studies)*

Type of diploma dissertation	Licencjat / inżynier / magister / magister inżynier*	
Number of diploma dissertation semesters	**Number of ECTS points**	**Code**
1	**20**	**W06GIG-SM3015D**
Character of diploma dissertation		
Literature survey, project, computer program, etc.		
Number of BU[1] ECTS points	**1,8**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

5. Ways of verifying assumed learning outcomes

Form of classes	Ways of verifying assumed learning outcomes
lecture	e.g. examination, progress/final test
class	e.g. progress/final test
laboratory	e.g. pretest, report from laboratory
project	e.g. project defence
seminar	e.g. participation in discussion, topic presentation, essay
training	e.g. report from training
diploma dissertation	prepared diploma dissertation

6. Range of diploma examination

1. Occupational risk assessment methods. Identification of harmful, dangerous and nuisance factors in the work environment.
2. Variogram and methods of its modelling
3. Kriging, its properties and types
4. Geophysical methods of exploration and identification of deposits.
5. Surface seismic methods. Reflective and refractive seismics.
6. Computer aided exploration and identification of deposits.
7. Optimisation techniques used in engineering.
8. Advances of technology & methods of future mining operations.
9. Aims, benefits, drawbacks of automation and industrial revolutions.
10. Applications of Interferometric Synthetic Aperture Radar.
11. Applications of map algebra and spatial statistics to determine surface deformation models
12. Perfectly elastic body vs linearly elastic body
13. Plate tectonic background of the geological processes
14. Magneto-, chemo-, seismic, sequence, and cycle stratigraphy
15. Surface geophysical methods
16. Geophysical methods used in boreholes
17. Classification of applied geophysical methods
18. Physical properties of rocks controlling the development of fractures, folds and other structural features

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

19. Ore forming geological processes which create different deposits
20. Genetic classification of deposits
21. Soil formation, soil classification methods
22. Hydrogeochemistry, transport processes
23. Analytical methods used in mineralogy and geology
24. Application of geophysical methods in different exploration phases
25. Different methods of stratigraphical correlation and their significance in raw material prospecting.
26. Rock mass age-determining methods
27. Geochemical aspects of the genesis of a chosen mineral
28. Principles of the distribution of chemical elements in the Earth
29. Applications of geo-informatics and GIS programs in mineral exploration
30. Modern measuring techniques in Geodesy
31. Sedimentary environments
32. Rock-forming processes
33. Characteristic of a selected minerals group
34. Plate tectonics and large scale structures
35. Water management issues
36. Sustainability and protection of groundwater
37. Vulnerability of groundwater
38. Laws and regulations related to exploration and exploitation of minerals / water
39. Mining legislation. Categorisation and classification of mineral reserves.
40. Groundwater chemistry and its impact on water use and legislation
41. Hydrogeological objects (wells, piezometers), construction and use.
42. Definitions of terms: ore mineral and industrial mineral. Classifications of industrial minerals.

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

7. Requirements concerning deadlines for crediting courses/groups of courses for all courses in particular blocks

No.	Subject / group of classes code	Name of subject / group of classes	Crediting by deadline of... (number of semester)
1	W06GIG-SM3017G	Physical Geology	1-4
2	W06GIG-SM3018G	Mineralogy and Geochemistry	1-4
3	W06GIG-SM3019G	Geophisical Exploration Methods I	1-4
4	W06GIG-SM3047G	Numerical methods and optimization GK	1-4
5	W06GIG-SM3048G	Engineering physics GK	1-4
6	W06GIG-SM3049G	Geodesy, spatial informatics GK	1-4
7	W06GIG-SM3050L	Computer science for engineers	1-4
8	W06GIG-SM3051G	Data and information processing GK	1-4
9	W06GIG-SM3031S	Graduate research seminar	1-4
10	W06GIG-SM3025G	Structural geology GK	2-4
11	W06GIG-SM3026G	Mineral Deposits GK	1-4
12	W06GIG-SM3027G	Engineering geology and hydrogeology GK	2-4
13	W06GIG-SM3028G	Analytical technics in mineralogy and petrology GK	2-4
14	W06GIG-SM3052G	Geophysical measurements GK	2-4
15	W06GIG-SM3030G	Geological mapping GK	2-4
16	W06GIG-SM3053G	Historical geology GK	2-4
17	W06GIG-SM3054G	Geophysical exploration methods II GK	2-4
18	W06GIG-SM3007	Principles and Application of InSAR and GIS in mining	3-4
19	W06GIG-SM3002	Computer Aided Geological Modelling & Geostatistics	3-4
20	W06GIG-SM3004	Engineering Geophysics	3-4
21	W06GIG-SM3005	Occupational Health and Safety	3-4
22	W06GIG-SM3000	Digital Mine	3-4
23	SJO-SM0003	Foreign language 1	3-4
24	SJO-SM0004	Foreign language 2	3-4
25	W06GIG-SM3055W	Geochemistry	3-4
26	GIG-SM0001AN	Free Elective	3-4

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

27	*W06GIG-SM3056P*	*Research in Innovative Exploration*	*3-4*
28	*W06GIG-SM3012G*	*Exploration Entrepreneurship*	*1-4*
29	*W06GIG-SM3013P*	*SOC Internship*	*1-4*
30	*W06GIG-SM3016P*	*Applied Field Exploration*	*1-4*
31	*W06GIG-SM3015D*	*Master Thesis*	*4*
32	*W06GIG-SM3014S*	*Diploma Seminar*	*4*

8. Plan of studies (attachment no. 4)

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Approved by faculty student government legislative body:

POLITECHNIKA WROCŁAWSKA
WYDZIAŁ GEOINŻYNIERII
GÓRNICTWA I GEOLOGII
Samorząd Studencki Wydziału Geoinżynierii,
Górnictwa i Geologii
50-421 Wrocław, Na Grobli 15, pokój 370

Jakub Dobrzański

Jakub Dobrzański
Chairman of the Student Government
of the Faculty of Geoengineering, Mining and Geology

28.09.23
Date

.....
name and surname, signature of student representative

28.09.23
Date

DZIEKAN
prof. dr hab. inż. Radosław Zimroz

.....
Dean's signature

Zał. nr 4 do ZW 78/2023
Attachment no. 3 to Program of Studies

PLAN OF STUDIES

FACULTY: Geoengineering, Mining and Geology

MAIN FIELD OF STUDY: Mining and geology

EDUCATION LEVEL: second-level studies

FORM OF STUDIES: full-time studies

PROFILE: general academic

SPECIALIZATION: Mineral Resources Exploration - Track UM - WUST

LANGUAGE OF STUDY: English

In effect since academic year 2023/24

	Winter		Summer		Winter		Summer	
semester	**1**	**ECTS**	**2**	**ECTS**	**3**		**4**	**ECTS**
hours	UM		UM		WUST		WUST	
1	Physical Geology 20001 E W06GIG-SM3017G	4	Structural geology 10020 E W06GIG-SM3025G	4	Computer Aided Geological Modelling & Geostatistics 10300Z W06GIG- SM3002	5	Exploration entrepreneurship (EFG) 10012 Z W06GIG-SM3012G	4
2								
3								
4	Mineralogy and Geochemistry 20100 E W06GIG-SM3018G	4	Mineral Deposits 20100 E W06GIG-SM3026G	4				
5					Engineering Geophisics 10010 Z W06GIG-SM3004	3	Diploma Seminar 00001Z W06GIG-SM3012G	1
6							Master Thesis 00010 Z W06GIG-SM3015D	20
7	Geophisical Exploration Methods I 20100E W06GIG-SM3019G	4	Engineering geology and hydrogeology 20001 E W06GIG-SM3027G	4	Principles and Application of InSAR and GIS in mining 20300E W06GIG-SM3007	5		
8								
9								
10	Numerical methods and optimization 10100 Z W0GGIG-SM3047G	2	Analytical technics in mineralogy and petrology 10100Z W06GIG-SM3028G	2				
11					Digital Mine 10100 Z W06GIG- SM3006	2		
12	Engineering physics 200001E W06GIG-SM3048G	4	Geophysical measurements 20100 E W06GIG-SM3052G	4				
13					Geochemistry 20000Z W06GIG- SM3055W	2	SOC Internship 00020 Z W06GIG-SM3013P	2
14								
15	Geodesy, spatial informatics 200001E W06GIG-SM3049G	4	Geological mapping 10020 E W06GIG-SM3030G	4	Foreign Language 2 01000 Z SJO-SM0004	1	Applied field exploration 00030 Z W06GIG-SM3013P	3
16					Research in innovative exploration 00060 Z W06GIG-SM3056P	7		
17								
18	Computer science for engineers 00200 Z W06GIG-SM3050L	2	Historical geology 20001 E W06GIG-SM3053G	4				
19								
20	Data and information processing 20001 Z W06GIG-SM3051G	4						
21			Geophysical exploration methods II. 20001 E W06GIG-SM3054G	4				
22					Free Elective 10000 GIG-SM0001AN	1		
23	Graduate research seminar 00002 Z W06GIG-SM3031S	2			Occupational Health and Safety 100100Z W06GIG- SM3005	2		
24								
25					Foreign Language 1 03000 Z SJO-SM0003	2		
26								
27								
Total ECTS		**30**		**30**		**30**		**30**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

1. Set of obligatory and optional subjects and groups of classes in semestral arrangement

Semester 1

Obligatory subjects / groups of classes (0 ECTS points)

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1																			
		Total																	

Optional subjects / groups of classes Number of ECTS points 30

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3017G	Physical Geology GK	2			1		K2_GIG_W08,W10 K2_GIG_UU10,U13 K2_GIG_K02,03	45	100	4	4	2,4	T/Z(w)	E		DN	2	S
2	W06GIG-SM3018G	Mineralogy and Geochemistry GK	2		1			K2_GIG_W02,W08,W10 K2_GIG_U08,U10,U13 K2_GIG_K03	45	100	4	4	2,2	T/Z(w)	E		DN	2	S
3	W06GIG-SM3019G	Geophisical Exploration Methods I GK	2		1			K2_GIG_W02,W08,W10 K2_GIG_U07,U10,U13 K2_GIG_K01,K03	45	100	4	4	2,2	T/Z(w)	E		DN	2	S
4	W06GIG-SM3047G	Numerical methods and optimization GK	1		1			K2_GIG_W02,W09 K2_GIG_U04,U13,U14 K2_GIG_K01,K03	30	50	2	2	1,5	T/Z(w)	Z		DN	1	S
5	W06GIG-SM3048G	Engineering physics GK	2				1	K2_GIG_W02 K2_GIG_U01, U13 K2_GIG_K02	45	100	4		2,2	T/Z(w)	E			2	S
6	W06GIG-SM3049G	Geodesy, spatial informatics GK	2				1	K2_GIG_W02,W08,W15,W16 K2_GIG_U04,U10,U13 K2_GIG_K01,K03	45	100	4	4	2,2	T/Z(w)	E		DN	2	S
7	W06GIG-SM3050L	Computer science for engineers			2			K2_GIG_U04,U13 K2_GIG_K01,K03	30	50	2	2	1,4	T	Z		DN	2	S
8	W06GIG-SM3051G	Data and information processing GK	2				1	K2_GIG_W02,W15,W16 K2_GIG_U04,U13 K2_GIG_K01,K03	45	100	4	4	2,1	T/Z(w)	Z		DN	2	S

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

9	W06GIG-SM3031S	Graduate research seminar					2	K2_GIG_W01,W07,W10 K2_GIG_U01,U08,U13 K2_GIG_K02	30	50	2	2	1,4	T/Z(w)	Z		DN	2	S
		Total	**13**		**5**	**1**	**5**		**360**	**750**	**30**	**24**	**17,6**					**17**	

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
13	**0**	**5**	**1**	**5**	**360**	**750**	**30**	**24**	**17,6**

Semester 2

Obligatory subjects / groups of classes (0 ECTS points)

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical [6]	Type[7]
1																			
		Total																	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Optional subjects / groups of classes Number of ECTS points 30

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3025G	Structural geology GK	1			2		K2_GIG_W02,W08,W10,W15 K2_GIG_U04,U07,U10,U13 K2_GIG_K03	45	100	4	4	2,4	T/Z(w)	E		DN	2	S
2	W06GIG-SM3026G	Mineral Deposits GK	2		1			K2_GIG_W08,W09,W10 K2_GIG_U01,U10,U13 K2_GIG_K03	45	100	4	4	2,2	T/Z(w)	E		DN	2	S
3	W06GIG-SM3027G	Engineering geology and hydrogeology GK	2		1			K2_GIG_W02,W08,W10,W14 K2_GIG_U04,U07U10,U13 K2_GIG_K03	45	100	4	4	2,2	T/Z(w)	E		DN	2	S
4	W06GIG-SM3028G	Analytical technics in mineralogy and petrology GK	1		1			K2_GIG_W02,W08,W10 K2_GIG_U04,U10,U13 K2_GIG_U_K03	30	50	2	2	1,5	T/Z(w)	Z		DN	1	S
5	W06GIG-SM3052G	Geophysical measurements GK	2		1			K2_GIG_W02,W07,W08 K2_GIG_U08,U10,U13 K2_GIG_U_K03	45	100	4	4	2,2	T/Z(w)	E			2	S
6	W06GIG-SM3030G	Geological mapping GK	1			2		K2_GIG_W08,W10,W11 K2_GIG_U04,U10 K2_GIG_K03	45	100	4	4	2,4	T/Z(w)	E		DN	2	S
7	W06GIG-SM3053G	Historical geology GK	2				1	K2_GIG_W08,W10 K2_GIG_U10,U13 K2_GIG_K02,03	45	100	4	4	2,2	T/Z(w)	E			2	S
8	W06GIG-SM3054G	Geophysical exploration methods II GK	2				1	K2_GIG_W02,W08,W10 K2_GIG_U07,U10,U13 K2_GIG_K01,K03	45	100	4	4	2,2	T/Z(w)	E			2	S
		Total	**13**		**4**	**4**	**2**		**345**	**750**	**30**	**30**	**17,3**					**15**	

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
13		**4**	**4**	**2**	**345**	**750**	**30**	**30**	**17,3**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Semester 3

Obligatory subjects / groups of classes Number of ECTS points19

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3002W	Computer Aided Geological Modelling & Geostatistics	1					K2_GIG_W06,W08,W15 K2_GIG_U04,U08,U14	15	50	2		0,8	T /Z	Z				PD/K
2	W06GIG-SM3002L	Computer Aided Geological Modelling & Geostatistics			3				45	75	3	2	1,9	T	Z		DN	3	PD/K
3	W06GIG-SM3004W	Engineering Geophysics	1					K2_GIG_W02,W08,W10 K2_GIG_U04,U13	15	25	1	1	0,8	T /Z	Z		DN		PD
4	W06GIG-SM3004P	Engineering Geophysics				1			15	50	2	2	0,9	T	Z		DN	2	PD
50	W06GIG-SM3007W	Principles and Application of InSAR and GIS in mining	2					K2_GIG_W15,W16,W18 K2_GIG_U04,U07,U08	30	50	2	2	1,4	T/Z(w)	E		DN		K
6	W06GIG-SM3007L	Principles and Application of InSAR and GIS in mining			3				45	75	3	3	2,0	T	Z		DN	3	K
7	W06GIG-SM3005W	Occupational Health and Safety	1					K2_GIG_W11,W12,W14,W17 K2_GIG_U11, K2_GIG_K02, K03	15	25	1	1	0,7	T /Z(w)	Z		DN		K
8	W06GIG-SM3005P	Occupational Health and Safety				1			15	25	1	1	0,8	T	Z		DN	1	K
9	W06GIG-SM3000W	Digital Mine	1					K2_GIG_W07,W12,W18,W19 K2_GIG_U04,U07,U08	15	25	1	1	0,8	T /Z(w)	Z		DN		K
10	W06GIG-SM3000L	Digital Mine			1				15	25	1	1	0,8	T	Z		DN	1	K
11	W06GIG-SM3055W	Geochemistry	2					K2_GIG_W02,W10 K2_GIG_K03	30	50	2	2	1,4	T /Z(w)	Z	O	DN		PD
		Total	**8**		**7**	**2**			**255**	**475**	**19**	**16**	**12,3**					**10**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Optional subjects / groups of classes (11 ECTS points)

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	SJO-SM0003	Foreign Language 1		3				K2_GIG_ U03	45	60	2		1,6	T	Z	O		2	KO
2	SJO-SM0004	Foreign Language 2		1				K2_GIG_U01,U02	15	30	1		0,6	T	Z	O		1	KO
3	GIG-SM0001AN	Free Elective	1						15	25	1		0,7	T /Z(w)	Z				S
4	W06GIG-SM3056P	Research in Innovative Exploration				6		K2_GIG_W01,W08,W10,W12 K2_GIG_U01,U07,U08,U10,U13 K2_GIG_K01,K02	90	175	7	4	3,9	T	Z		DN	7	S
		Total	**1**	**4**	**0**	**6**			**165**	**290**	**11**	**4**	**6,8**					**10**	

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
9	**4**	**7**	**8**	**0**	**420**	**765**	**30**	**20**	**19,1**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Semester 4

Obligatory subjects / groups of classes Number of ECTS points 9

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3012G	Exploration Entrepreneurship GK	1			1	2	K2_GIG_W03,W05,W09 K2_GIG_U08,U09 K2_GIG_K01,K02,K03	60	100	4		3,0	Z	Z			P(3)	S
2	W06GIG-SM3013P	SOC Internship				2		K2_GIG_W05,W09 K2_GIG_U08,U09 K2_GIG_K01,K02,K03	30	50	2		1,5	T	Z			P(2)	S
3	W06GIG-SM3016P	Applied Field Exploration				3		K2_GIG_W08,W15 K2_GIG_U04,U09,U10,U13 K2_GIG_K02	45	75	3	1	2,1	T	Z		DN	P(3)	S
		Total	**1**	**0**	**0**	**6**	**2**		**135**	**225**	**9**	**1**	**6,6**					**8**	

Optional subjects / groups of classes (21 ECTS points)

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3014S	Diploma Seminar					1	K2_GIG_W01 K2_GIG_U01,U13 K2_GIG_K02,K03	15	25	1	1	0,8	T	Z		DN	P(1)	S
2	W06GIG-SM3015D	Master Thesis				1		K2_GIG_W01,W05,W10 K2_GIG_U01,U04,U08,U10,U13,U15 K2_GIG_K01,K02,K03	15	500	20	20	1,8	T	Z		DN	P (20)	S
		Total	**0**	**0**	**0**	**1**	**1**		**30**	**525**	**21**	**21**	**2,6**					**21**	

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
1	**0**	**0**	**7**	**3**	**165**	**750**	**30**	**22**	**9,2**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2. Set of examinations in semestral arrangement

Subject / groups of classes code	Names of subjects / groups of classes ending with examination	Semester
W06GIG-SM3017G	1. Physical Geology	1
W06GIG-SM3018G	2. Mineralogy and Geochemistry	1
W06GIG-SM3019G	3. Geophisical Exploration Methods I	1
W06GIG-SM3048G	4. Engineering physics	1
W06GIG-SM3049G	5. Geodesy, spatial informatics	1
W06GIG-SM3017G	1. Structural geology	2
W06GIG-SM3018G	2. Mineral Deposits	2
W06GIG-SM3019G	3. Engineering geology and hydrogeology	2
W06GIG-SM3030G	4. Geological mapping	2
W06GIG-SM3052G	5. Geophysical measurements	2
W06GIG-SM3053G	6. Historical geology	2
W06GIG-SM3054G	7. Geophysical exploration methods II	2
W06GIG-SM3007	1. Principles and Applications of InSAR in Mining	3
	Final diploma examination	4

3. Numbers of allowable deficit of ECTS points after particular semesters

Semester	Allowable deficit of ECTS points after semester
1	12
2	8
3	0

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Opinion of student government legislative body

POLITECHNIKA WROCŁAWSKA
WYDZIAŁ GEOINŻYNIERII
GÓRNICTWA I GEOLOGII
Samorząd Studencki Wydziału Geoinżynierii,
Górnictwa i Geologii
50-421 Wrocław, Na Grobli 15, pokój 370

28.09.23 ..... Jakub Dobrzański .....

Jakub Dobrzański
Chairman of the Student Government
of the Faculty of Geoengineering, Mining and Geology

Date — Name and surname, signature of student representative

DZIEKAN

28.09.23 ..... prof. dr hab. inż. Radosław Zimroz (1) .....

Date — Dean's signature

FACULTY: **of Geoengineering, Mining and Geology**

MAIN FIELD OF STUDY: **Mining and Geology**

LANGUAGE OF STUDY: English

SPECIALIZATION: **Mineral Resources Exploration**

- Track -WUST - UNI MISKOLC

Zał. nr 3 do ZW 78/2023

Attachment no. 2. to the Program of Studies

DESCRIPTION OF THE PROGRAM OF STUDIES

Main field of study MINING AND GEOLOGY
Profile general academic
Level of studies second level studies
Form of studies full-time studies

1. General description

1.1 Number of semesters: 4	*1.2 Total number of ECTS points necessary to complete studies at a given level: 120*
1.3 Total number of hours: 1365	*1.4 Prerequisites (particularly for second-level studies): Bachelor of Science in Engineering diploma, interview*
1.5 Upon completion of studies graduate obtains *professional degree of: **magister inżynier** - 2nd degree qualifications*	*1.6 Graduate profile, employability:* *The program will train T-shaped earth science specialists having a strong background in classical disciplines of geology and geophysics complemented with modern 3D modelling as well as data processing and interpretation skills, while the boundary-crossing competences will cover skills in innovative mineral exploration techniques and technologies used in the field, in laboratories, in an underground and underwater environment. Students will also be trained in sustainability, social responsibility and social licence to operate. T-shaped mineral explorers will use Industry 4.0-derived tools and methods for mineral resource exploration, mentored by experts.* *They will be prepared to work in enterprises, technical supervision institutions, public state and local administration, in research and development organisations, in Poland and*

	abroad, will also be prepared to start own business or work as free lanced exploration geologists. The graduates will be able to use English freely and will be prepared to work in an international environment and intercultural groups during their professional career.
1.7 Possibility of continuing studies: *eligibility to apply for admission to a doctoral school, non-degree postgraduate programmes*	*1.8 Indicate connection with University's mission and its development strategy:* *The study programs of all specializations within the field of study Mining and Geology respond to the strategic goals of the University (Strategia Politechniki Wrocławskiej 2023–2030), by rising the level of correlation of the study offer with the needs of the market (C3), by enhancing the quality of education through didactic interdisciplinarity and by cooperation with industrial partners as well as increasing the level of entrepreneurship, creativity and involvement of students in research processes (C4, C2). Graduates of the faculty should be creative, professional, have theoretical background and practical abilities, as well as have interpersonal skills and cross-cultural experience (C5).* *The Faculty of Geoengineering, Mining and Geology, as one of the units of the Wrocław University of Science and Technology, educates in the field of engineering, broadened by knowledge in natural and economic sciences. The profile and quality of education are at the international level and are adapted to the needs of the national and global mineral industries.*

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2. Detailed description

2.1 Total number of learning outcomes in the program of study: W (knowledge) = 19, U (skills) = 15, K (competences) = 3, W + U + K = 37

~~**2.2 For the main field of study assigned to more than one discipline - the number of learning outcomes assigned to the discipline:**~~

~~**D1 (major) ..... (this number must be greater than half the total number of learning outcomes)**~~
~~**D2 .....**~~
~~**D3 .....**~~
~~**D4 .....**~~

~~**2.3 For the main field of study assigned to more than one discipline - percentage share of the number of ECTS points for each discipline:**~~

~~**D1 .....% ECTS points**~~
~~**D2 .....% ECTS points**~~
~~**D3 .....% ECTS points**~~
~~**D4 .....% ECTS points**~~

2.4a. For the general academic profile of the main field of study – the number of ECTS points assigned to the classes related to the University's academic activity in the discipline or disciplines to which the main field of study is assigned – DN (must be greater than 50% of the total number of ECTS points from 1.2) 95 ECTS

2.4b. ~~For the practical profile of the main field of study - the number of ECTS points assigned to the classes shaping practical skills (must be greater than 50% of the total number of ECTS points from 1.2)~~

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2.5 Concise analysis of compliance of the assumed learning outcomes with the needs of the labor market

The economic development of the country is closely dependent on natural resources, the ability to use them and having appropriate engineering workforce. The assumed learning outcomes correspond to the needs of practice in the field of the generally understood management of mineral resources - technologies and techniques for their identification, valuation, extraction, processing, revitalization of industrial areas, and the practice of managing an enterprise (especially mining) in the sense of managing information, environment and people, using the latest IT and marketing techniques and methods. This integration of economic needs and assumed educational effects favorably shape the labor market for the graduates of the Faculty. Additionally, a good command of English and experience of working in an international group will open up the possibility of working in foreign branches of Polish enterprises and in foreign companies.

2.6. The total number of ECTS points that a student must obtain in classes requiring direct participation of academic teachers or other persons conducting classes and students (enter the sum of ECTS points for courses / groups of courses marked with the BU[1] code) **67,5ECTS**

2.7. Total number of ECTS points, which student has to obtain from basic sciences classes

Number of ECTS points for obligatory subjects	6
Number of ECTS points for optional subjects	0
Total number of ECTS points	6

2.8. Total number of ECTS points, which student has to obtain from practical classes, including project and laboratory classes (enter total number of ECTS points for courses/group of courses denoted with code P)

Number of ECTS points for obligatory subjects	24
Number of ECTS points for optional subjects	58
Total number of ECTS points	82

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2.9. Minimum number of ECTS points, which student has to obtain doing education blocks offered as part of University-wide classes or other main field of study (enter number of ECTS points for courses/groups of courses denoted with code O)

3 ECTS points

2.10. Total number of ECTS points, which student may obtain doing optional blocks (min. 30% of total number of ECTS points)

84 ECTS points

3. Description of the process leading to learning outcomes acquisition:

1. Upon starting classes in each subject, the student has an appropriate level of knowledge and skills which constitute the prerequisites for a given course (it is verified by the teacher or the dean's office).
2. The student participates in classes organized at the university.
3. The student carries out the assigned work in class and at home (projects, computational tasks, analyzes, prepares presentations) and studies the literature and materials recommended by the teacher.
4. The student uses the appointed hours of the tutor's consultation, explaining his uncertainties and verifying the correct understanding of the course content.
5. The student participates in periodic tests of knowledge and skills, completes the tests available on the e-portal and is familair with the correct answers, grades and comments from the teacher.
6. In some subjects, the student participates in group tasks, taking part in the organization of the group's work, assessment of the activities of individual participants and takes responsibility for the result of the group's work.
7. The student is encouraged to become involved in the work of research clubs, student organizations, discussion clubs, sports groups, participation in social life through work in public welfare organizations, voluntary work, thus gaining valuable interpersonal skills and social competences.
8. The student participates in meetings with companies from the industry, technical excursions, job fairs, tries to gain knowledge about the labor market and additional advantages when applying for a job
9. The student is encouraged to participate in an international student exchange, and through contact with foreigners at the faculty, he or she acquires additional interpersonal, cultural and language qualifications

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4. List of education blocks:

4.1. List of obligatory blocks:

4.1.1 List of general education blocks

4.1.1.1 *Liberal-managerial subjects* block *(7 ECTS points):*

No.	Subject/ group of classes code	Name of subject/group of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject/ group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3003G	Project Management, Appraisal and Risk Evaluation (GK)	1		2	1		K2_GIG_W03,W05,W11 K2_GIG_U04,U06,U08,U15 K2_GIG_K01	60	100	4	4	3,1	T/Z(w)	E(w), Z(l,p)		DN	P (3)	KO
2	W06GIG-SM3000W	Operations Research	1					K2_GIG_W06 K2_GIG_U10,U14 K2_GIG_K01	15	25	1	1	0,8	T /Z	Z		DN		KO
3	W06GIG-SM30000L	Operations Research			1				15	50	2	2	0,7	T	Z		DN	P (2)	KO
		Total	**2**	**0**	**3**	**1**	**0**		**90**	**175**	**7**	**7**	**4,6**					**5**	

Altogether for general education blocks

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
2	**0**	**3**	**1**	**0**	**90**	**175**	**7**	**7**	**4,6**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.1.2 List of basic sciences blocks

4.1.2.1 *Mathematics* block

No.	Subject/ group of classes code	Name of subject/group of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject/ group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3002W	Computer Aided Geological Modelling & Geostatistics (część: Geostatistics)	1					K2_GIG_W06,W08,W15 K2_GIG_U04,U08,U14	15	50	2		0,8	T	Z				PD
2	W06GIG-SM3002L	Computer Aided Geological Modelling & Geostatistics (część: Geostatistics)			1				15	25	1		0,6	T	Z			P (1)	PD
		Total	**1**	**0**	**1**	**0**	**0**		**30**	**75**	**3**		**1,4**					**1**	

4.1.2.3 *Physics block*

No.	Subject/ group of classes code	Name of subject/group of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3004W	Engineering Geophysics	1					K2_GIG_W02,W08,W10	15	25	1	1	0,8	T /Z	Z		DN		PD
	W06GIG-SM3004P	Engineering Geophysics				1		K2_GIG_U04,U13	15	50	2	2	0,9	T	Z		DN	P(2)	PD
		Total	**2**	**0**	**0**	**0**	**0**		**30**	**75**	**3**	**3**	**1,7**					**2**	

Altogether for basic sciences blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
3	**0**	**1**	**0**	**0**	**60**	**150**	**6**	**3**	**3,1**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.1.3 List of the main field of study blocks

4.1.3.1 *Obligatory main field of study* blocks

No.	Subject/ group of classes code	Name of subject/group of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3002L	Computer Aided Geological Modelling & Geostatistics (Część: Computer Aided Geological Modelling)			2			K2_GIG_W06,W08,W15 K2_GIG_U04,U08,U14	30	50	2	2	1,3	T	Z		DN	P(2)	K
2	W06GIG-SM3006W	Digital Mine	1					K2_GIG_W07,W12,W18,W19 K2_GIG_U04,U07,U08	15	25	1	1	0,8	T /Z(w)	Z		DN		K
3	W06GIG-SM3006L	Digital Mine			1				15	25	1	1	0,8	T	Z		DN	P(1)	K
4	W06GIG-SM3005W	Occupational Health and Safety	1					K2_GIG_W11,W12,W14,W17 K2_GIG_U11, K2_GIG_K02, K03	15	25	1	1	0,7	T /Z(w)	Z		DN		K
5	W06GIG-SM3005P	Occupational Health and Safety				1			15	25	1	1	0,8	T	Z		DN	P(1)	K
6	W06GIG-SM3007W	Principles and Application of InSAR and GIS in mining	2					K2_GIG_W15,W16,W18 K2_GIG_U04,U07,U08	30	50	2	2	1,4	T/Z(w)	E		DN		K
7	W06GIG-SM3007L	Principles and Application of InSAR and GIS in mining			3				45	75	3	3	2,0	T	Z		DN	P(3)	K
8	W06GIG-SM3001W	Environmental Management	2					K2_GIG_W04,W12,W13,W18 K2_GIG_U05,U10,U11,U12 K2_GIG_K02,K03	30	50	2	2	1,3	T /Z(w)	Z		DN		K
9	W06GIG-SM3001S	Environmental Management					1		15	25	1	1	0,8	T	Z		DN	P(1)	K
10	W06GIG-SM3012G	Exploration Entrepreneurship GK	1			1	2	K2_GIG_W03,W05,W09 K2_GIG_U08,U09 K2_GIG_K01,K02,K03	60	100	4		3,0	Z	Z			P(3)	S
11	W06GIG-SM3013P	SOC Internship				2		K2_GIG_W05,W09 K2_GIG_U08,U09 K2_GIG_K01,K02,K03	30	50	2		1,5	T	Z			P(2)	S
12	W06GIG-SM3016P	Applied Field Exploration				3		K2_GIG_W08,W15 K2_GIG_U04,U09,U10,U13 K2_GIG_K02	45	75	3	1	2,1	T	Z		DN	P(3)	S
		Total	**7**	**0**	**6**	**7**	**3**		**345**	**575**	**23**	**15**	**16,5**					**16**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Altogether (for main field of study blocks):

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
7	**0**	**6**	**7**	**3**	**345**	**575**	**23**	**15**	**16,5**

4.2 List of optional blocks

4.2.1 List of general education blocks

4.2.1.2 *Foreign languages* block *(min. 3 ECTS points):*

No.	Subject/ group of classes code	Name of subject/group of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	SJO-SM0003	Foreign Language 1		3				K2_GIG_ U03	45	60	2		1,6	T	Z	O		P (2)	KO
2	SJO-SM0004	Foreign Language 2		1				K2_GIG_U01,U02	15	30	1		0,6	T	Z	O		P(1)	KO
		Total	**0**	**4**	**0**	**0**	**0**		**60**	**90**	**3**		**2,2**					**3**	

Altogether for general education blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
0	**4**	**0**	**0**	**0**	**60**	**90**	**3**	**0**	**2,2**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.2.4 List of specialization blocks

4.2.4.1 *Specialization subjects (e.g. whole specialization)* blocks *(60 ECTS points):*

No.	Subject/ group of classes code	Name of subject/group of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3017G	Physical Geology GK	2			1		K2_GIG_W08,W10 K2_GIG_UU10,U13 K2_GIG_K02,03	45	100	4	4	2,4	T/Z(w)	E		DN	2	S
2	W06GIG-SM3018G	Mineralogy and Geochemistry GK	2		1			K2_GIG_W02,W08,W10 K2_GIG_U08,U10,U13 K2_GIG_K03	45	100	4	4	2,2	T/Z(w)	E		DN	2	S
3	W06GIG-SM3019G	Geophisical Exploration Methods I GK	2		1			K2_GIG_W02,W08,W10 K2_GIG_U07,U10,U13 K2_GIG_K01,K03	45	100	4	4	2,2	T/Z(w)	E		DN	2	S
4	W06GIG-SM3020G	Geological Interpretation and Prospecting GK	2			2		K2_GIG_W02,W08,W10 K2_GIG_U04,U06,U09,U10,U13 K2_GIG_K01	60	100	4	2	3,0	T/Z(w)	E		DN	2	S
5	W06GIG-SM3021G	Geophysical Interpretation and Prospecting GK	2			2		K2_GIG_W02,W08,W09,W11,W15 K2_GIG_U04,U10,U13 K2_GIG_K02	60	100	4	3	3,0	T/Z(w)	E		DN	2	S
6	W06GIG-SM3022G	Geoelectric lectureship GK	2			2		K2_GIG_W02,W08,W10 K2_GIG_U04,U10 K2_GIG_K03	60	100	4		3,0	T/Z(w)	Z			2	S
7	W06GIG-SM3023G	Global environmental geophysics GK	1				1	K2_GIG_W02, W10,W12 K2_GIG_U01,U05,U08 K2_GIG_K03	30	50	2		1,7	T/Z(w)	Z			1	S
8	W06GIG-SM3024G	Non-metallic industrial minerals GK	2		2			K2_GIG_W02,W08,W10, K2_GIG_U07,U10 K2_GIG_K01	60	100	4	4	2,7	T/Z(w)	Z		DN	2	S
9	W06GIG-SM3025G	Structural geology GK	1			2		K2_GIG_W02,W08,W10,W15 K2_GIG_U04,U07,U10,U13 K2_GIG_K03	45	100	4	4	2,4	T/Z(w)	E		DN	2	S
10	W06GIG-SM3026G	Mineral Deposits GK	2		1			K2_GIG_W08,W09,W10 K2_GIG_U01,U10,U13 K2_GIG_K03	45	100	4	4	2,2	T/Z(w)	E		DN	2	S
11	W06GIG-SM3027G	Engineering geology and hydrogeology GK	2		1			K2_GIG_W02,W08,W10,W14 K2_GIG_U04,U07U10,U13 K2_GIG_K03	45	100	4	4	2,2	T/Z(w)	E		DN	2	S
12	W06GIG-SM3028G	Analytical technics in mineralogy and petrology GK	1		1			K2_GIG_W02,W08,W10 K2_GIG_U04,U10,U13 K2_GIG_U_K03	30	50	2	2	1,5	T/Z(w)	Z		DN	1	S
13	W06GIG-SM3029G	Geochemical prospecting methods GK	1			2		K2_GIG_W02,W08,W10 K2_GIG_U04,U10,U13 K2_GIG_K02	45	100	4	4	2,3	T/Z(w)	Z		DN	2	S
14	W06GIG-SM3030G	Geological mapping GK	1			2		K2_GIG_W08,W10,W11 K2_GIG_U04,U10 K2_GIG_K03	45	100	4	4	2,4	T/Z(w)	E		DN	2	S

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
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[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

15	W06GIG-SM3031S	Graduate research seminar					2	K2_GIG_W01,W07,W10 K2_GIG_U01,U08,U13 K2_GIG_K02	30	50	2	2	1,4	T/Z(w)	Z		DN	2	S
16	W06GIG-SM3032P	Student research project				6		K2_GIG_W01,W08,W10,W12 K2_GIG_U01,U07,U08,U10,U13 K2_GIG_K01,K02	90	150	6	4	3,9	T/Z(w)	Z		DN	6	S
		Total	**23**	**0**	**7**	**19**	**3**		**780**	**1500**	**60**	**49**	**38,5**					**34**	

4.2.4.2 *Diploma (e.g. diploma profile)* block *(21 ECTS points):*

No.	Subject/ group of classes code	Name of subject/group of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3014S	Diploma Seminar					1	K2_GIG_W01 K2_GIG_U01,U13 K2_GIG_K03	15	25	1	1	0,8	T	Z		DN	P(1)	S
2	W06GIG-SM3015D	Master Thesis				1		K2_GIG_W01,W05,W10 K2_GIG_U01,U04, U08,U10,U13,U15 K2_GIG_K01,K03	15	500	20	20	1,8	T	Z		DN	P (20)	S
		Total	**0**	**0**	**0**	**1**	**1**		**30**	**525**	**21**	**21**	**2,6**					**21**	

Altogether for specialization blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
23	**0**	**7**	**20**	**4**	**810**	**2025**	**81**	**70**	**41,1**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
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4.3 Training block - concerning principles of training crediting – attachment no. …

Opinion of the Advisory Faculty Council concerning the rules of crediting training block

Name of training			
Number of ECTS points	**Number of ECTS points for BU[1] classes**	**Training crediting mode**	**Code**

Training duration	Training objective
	Internship

4.4 „Diploma dissertation" block (*if it is foreseen at first level studies)*

Type of diploma dissertation	Licencjat / inżynier / magister / magister inżynier*	
Number of diploma dissertation semesters	**Number of ECTS points**	**Code**
1	**20**	**W06GIG-SM3015D**
Character of diploma dissertation		
Literature survey, project, computer program, etc.		
Number of BU[1] ECTS points	**1,8**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

5. Ways of verifying assumed learning outcomes

Form of classes	Ways of verifying assumed learning outcomes
lecture	e.g. examination, progress/final test
class	e.g. progress/final test
laboratory	e.g. pretest, report from laboratory
project	e.g. project defence
seminar	e.g. participation in discussion, topic presentation, essay
training	e.g. report from training
diploma dissertation	prepared diploma dissertation

6. Range of diploma examination

1. Occupational risk assessment methods. Identification of harmful, dangerous and nuisance factors in the work environment.
2. Costs as the subject of cost accounting. Variable and fixed costs. Break even point.
3. Capital budgeting, evaluation of different methods
4. Liquidity vs profitability of a company. Ways of their evaluation
5. Environmental management systems
6. Characteristics of hazards for the natural environment resulting from human activities
7. Variogram and methods of its modelling
8. Kriging, its properties and types
9. Geophysical methods of exploration and identification of deposits.
10. Surface seismic methods. Reflective and refractive seismics.
11. Computer aided exploration and identification of deposits.
12. Decision models used in management.
13. Advances of technology & methods of future mining operations.
14. Aims, benefits, drawbacks of automation and industrial revolutions.
15. Applications of Interferometric Synthetic Aperture Radar.
16. Applications of map algebra and spatial statistics to determine surface deformation models
17. Plate tectonic background of the geological processes

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[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

18. Magneto-, chemo-, seismic, sequence, and cycle stratigraphy
19. Surface geophysical methods
20. Geophysical methods used in boreholes
21. Classification of applied geophysical methods
22. Physical properties of rocks controlling the development of fractures, folds and other structural features
23. Ore forming geological processes which create the different deposits
24. Genetic classification of deposits
25. Mineral exploration methods, quality control and quality assurance
26. Soil formation, soil classification methods
27. Hydrogeochemistry, transport processes
28. Analytical methods used in mineralogy and geology
29. Basic methods of resource estimation
30. Water exploration by geophysical methods
31. The most important well logging methods
32. Geophysical methods in geothermal exploration
33. Composition of the Earth' interior based on seismic tomography, the most significant boundaries
34. Physical basics of direct current (DC) geoelectric methods
35. Physical basics of alternating current (AC) electromagnetic methods
36. Main geochemical mineral exploration methods
37. Geological characteristics of deposits of two chosen non-metallic minerals
38. Sedimentary environments
39. Rock-forming processes
40. Characteristic of a selected minerals group
41. Plate tectonics and large scale structures
42. Water management issues
43. Sustainability and protection of groundwater
44. Vulnerability of groundwater
45. Laws and regulations related to exploration and exploitation of minerals / water

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

7. Requirements concerning deadlines for crediting courses/groups of courses for all courses in particular blocks

No.	Subject / group of classes code	Name of subject / group of classes	Crediting by deadline of... (number of semester)
1	W06GIG-SM3007	Principles and Application of InSAR and GIS in mining	1-4
2	W06GIG-SM3002	Computer Aided Geological Modelling & Geostatistics	1-4
3	W06GIG-SM3003G	Project Management, Appraisal and Risk Evaluation	1-4
4	W06GIG-SM3004	Engineering Geophysics	1-4
5	W06GIG-SM3001	Environmental Management	1-4
6	W06GIG-SM3005	Occupational Health and Safety	1-4
7	SJO-SM0003	Foreign language 1	1-4
8	SJO-SM0004	Foreign language 2	1-4
9	W06GIG-SM3006	Digital Mine	1-4
10	W06GIG-SM3000	Operations Research	1-4
11	W06GIG-SM3017G	Physical Geology	2-4
12	W06GIG-SM3018G	Mineralogy and Geochemistry	2-4
13	W06GIG-SM3019G	Geophisical Exploration Methods I	2-4
14	W06GIG-SM3020G	Geological Interpretation and Prospecting	2-4
15	W06GIG-SM3021G	Geophysical Interpretation and Prospecting	2-4
16	W06GIG-SM3022G	Geoelectric lectureship	2-4
17	W06GIG-SM3023G	Global environmental geophysics	2-4
18	W06GIG-SM3024G	Non-metallic industrial minerals	2-4
19	W06GIG-SM3025G	Structural geology GK	2-4
20	W06GIG-SM3026G	Mineral Deposits GK	2-4
21	W06GIG-SM3027G	Engineering geology and hydrogeology GK	2-4
22	W06GIG-SM3028G	Analytical technics in mineralogy and petrology GK	2-4
23	W06GIG-SM3029G	Geochemical prospecting methods GK	2-4
24	W06GIG-SM3030G	Geological mapping GK	2-4
25	W06GIG-SM3031S	Graduate research seminar	2-4
26	W06GIG-SM3032P	Student research project	2-4

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
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27	*W06GIG-SM3012G*	*Exploration Entrepreneurship*	*1-4*
28	*W06GIG-SM3013P*	*SOC Internship*	*1-4*
29	*W06GIG-SM3016P*	*Applied Field Exploration*	*1-4*
30	*W06GIG-SM3014S*	*Master Thesis*	*4*
31	*W06GIG-SM3015D*	*Diploma Seminar*	*4*

8. Plan of studies (attachment no. 4)

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Approved by faculty student government legislative body:

POLITECHNIKA WROCŁAWSKA
WYDZIAŁ GEOINŻYNIERII
GÓRNICTWA I GEOLOGII
Samorząd Studencki Wydziału Geoinżynierii,
Górnictwa i Geologii
50-421 Wrocław, Na Grobli 15, pokój 370

Jakub Dobrzański

Jakub Dobrzański
Chairman of the Student Government
of the Faculty of Geoengineering, Mining and Geology

28.09.23
Date

.....
name and surname, signature of student representative

28.09.23
Date

DZIEKAN
prof. dr hab. inż. Radosław Zimroz

.....
Dean's signature

Zał. nr 4 do ZW 78/2023
Attachment no. 3 to Program of Studies

PLAN OF STUDIES

FACULTY: Geoengineering, Mining and Geology

MAIN FIELD OF STUDY: Mining and geology

EDUCATION LEVEL: second-level studies

FORM OF STUDIES: full-time studies

PROFILE: general academic

SPECIALIZATION: Mineral Resources Exploration - Track WUST - UM

LANGUAGE OF STUDY: English

In effect since academic year 2023/24

	Summer		Winter		Summer		Winter	
semester	**1**	**ECTS**	**2**	**ECTS**	**3**	**ECTS**	**4**	**ECTS**
hours	WUST		UM		UM		WUST	
1	Operations Research 10100Z W06GIG-SM3000	3	Physical Geology 20010 E W06GIG-SM3017G	4	Structural geology 10020 E W06GIG-SM3025G	4	Exploration entrepreneurship (EFG) 10012 Z W06GIG-SM3012G	4
2								
3	Environmental Management 20001Z W06GIG-SM3001	3						
4			Mineralogy and Geochemistry 20100 E W06GIG-SM3018G	4	Mineral Deposits 20100 E W06GIG-SM3026G	4		
5							Diploma Seminar 00001Z W06GIG-SM3014S	1
6	Computer Aided Geological Modelling & Geostatistics 10300Z W06GIG-SM3002	5						
7			Geophisical Exploration Methods I 20100E W06GIG-SM3019G	4	Engineering geology and hydrogeology 20100 E W06GIG-SM3027G	4	Master Thesis W06GIG-SM3015D	20
8								
9								
10	Project Management, Appraisal and Risk Evaluation 10210E W06GIG-SM3003G	4	Geological Interpretation and Prospecting 20020E W06GIG-SM3020G	4	Analytical technics in mineralogy and petrology 10100Z W06GIG-SM3028G	2		
11								
12					Geochemical prospecting methods 10020 z W06GIG-SM3029G	4		
13							SOC Internship 00020Z W06GIG-SM3013P	2
14	Engineering Geophisics 10010 Z W06GIG-SM3004	3	Geophysical Interpretation and Prospecting 20020E W06GIG-SM3021G	4				
15					Geological mapping 10000 1 E W06GIG-SM3030G	4	Applied field exploration 00030Z W06GIG-SM3016P	3
16	Occupational Health and Safety 100100Z W06GIG-SM3005	2						
17								
18	Foreign Language 1 03000 Z SJO-SM0003	2	Geoelectric lectureship 20020Z W06GIG-SM3022G	4	Graduate research seminar 00002Z W06GIG-SM3031S	2		
19								
20					Student research project 00060Z W06GIG-SM3032P	6		
21	Digital Mine 10100 Z W06GIG-SM3006	2						
22			Global environmental geophysics 10001Z W06GIG-SM3023G	2				
23	Principles and Application of InSAR and GIS in mining 20300E W06GIG-SM3007	5	Non-metallic industrial minerals 20200Z W06GIG-SM3024G	4				
24								
25								
26								
27	Foreign Language 2 01000 Z SJO-SM0004	1						
28								
Total ECTS		**30**		**30**		**30**		**30**

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1. Set of obligatory and optional subjects and groups of classes in semestral arrangement

Semester 1

Obligatory subjects / groups of classes Number of ECTS points 27

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3000W	Operations Research	1					K2_GIG_W06 K2_GIG_U10,U14 K2_GIG_K01	15	25	1	1	0,8	T /Z	Z		DN		KO
2	W06GIG-SM3000L	Operations Research			1				15	50	2	2	0,7	T	Z		DN	P (2)	KO
3	W06GIG-SM3002W	Computer Aided Geological Modelling & Geostatistics	1					K2_GIG_W06,W08,W15 K2_GIG_U04,U08,U14	15	50	2		0,8	T /Z	Z		DN		PD/K
4	W06GIG-SM3002L	Computer Aided Geological Modelling & Geostatistics			3				45	75	3	2	1,9	T	Z		DN	P (3)	PD/K
5	W06GIG-SM3003G	Project Management, Appraisal and Risk Evaluation (GK)	1		2	1		K2_GIG_W03,W05,W11 K2_GIG_U04,U06,U08,U15 K2_GIG_K01	60	100	4	4	3,1	T/Z(w)	E(w), Z(l,p)		DN	P (3)	KO
6	W06GIG-SM3001W	Environmental Management	2					K2_GIG_W04,W12,W13,W18 K2_GIG_U05,U10,U11,U12 K2_GIG_K02,K03	30	50	2	2	1,3	T /Z(w)	Z		DN		K
7	W06GIG-SM3001S	Environmental Management					1		15	25	1	1	0,8	T	Z		DN	P(1)	K
8	W06GIG-SM3004W	Engineering Geophysics	1					K2_GIG_W02,W08,W10 K2_GIG_U04,U13	15	25	1	1	0,8	T /Z	Z		DN		PD
9	W06GIG-SM3004P	Engineering Geophysics				1			15	50	2	2	0,9	T	Z		DN	P(2)	PD
10	W06GIG-SM3007W	Principles and Application of InSAR and GIS in mining	2					K2_GIG_W15,W16,W18 K2_GIG_U04,U07,U08	30	50	2	2	1,4	T/Z(w)	E		DN		K
11	W06GIG-SM3007L	Principles and Application of InSAR and GIS in mining			3				45	75	3	3	2,0	T	Z		DN	P(3)	K
12	W06GIG-SM3005W	Occupational Health and Safety	1					K2_GIG_W11,W12,W14,W17 K2_GIG_U11, K2_GIG_K02, K03	15	25	1	1	0,7	T /Z(w)	Z		DN		K
13	W06GIG-SM3005P	Occupational Health and Safety				1			15	25	1	1	0,8	T	Z		DN	P(1)	K
14	W06GIG-SM3000W	Digital Mine	1					K2_GIG_W07,W12,W18,W19 K2_GIG_U04,U07,U08	15	25	1	1	0,8	T /Z(w)	Z		DN		K
15	W06GIG-SM3000L	Digital Mine			1				15	25	1	1	0,8	T	Z		DN	P(1)	K
		Total	**10**	**0**	**10**	**3**	**1**		**360**	**675**	**27**	**24**	**17,6**					**16**	

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[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Optional subjects / groups of classes (3 ECTS points)

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	SJO-SM0003	Foreign Language 1		3				K2_GIG_ U03	45	60	2		1,6	T	Z	O		P(2)	KO
2	SJO-SM0004	Foreign Language 2		1				K2_GIG_U01,U02	15	30	1		0,6	T	Z	O		P(1)	KO
		Total	**0**	**4**	**0**	**0**			**60**	**90**	**3**	**0**	**2,2**					**3**	

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
10	**4**	**10**	**3**	**1**	**420**	**765**	**30**	**24**	**19,8**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Semester 2

Obligatory subjects / groups of classes (0 ECTS points)

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1																			
		Total																	

Optional subjects / groups of classes Number of ECTS points 30

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3017G	Physical Geology GK	2			1		K2_GIG_W08,W10 K2_GIG_UU10,U13 K2_GIG_K02,03	45	100	4	4	2,4	T/Z(w)	E		DN	2	S
2	W06GIG-SM3018G	Mineralogy and Geochemistry GK	2		1			K2_GIG_W02,W08,W10 K2_GIG_U08,U10,U13 K2_GIG_K03	45	100	4	4	2,2	T/Z(w)	E		DN	2	S
3	W06GIG-SM3019G	Geophisical Exploration Methods I GK	2		1			K2_GIG_W02,W08,W10 K2_GIG_U07,U10,U13 K2_GIG_K01,K03	45	100	4	4	2,2	T/Z(w)	E		DN	2	S
4	W06GIG-SM3020G	Geological Interpretation and Prospecting GK	2			2		K2_GIG_W02,W08,W10 K2_GIG_U04,U06,U09,U10,U13 K2_GIG_K01	60	100	4	2	3,0	T/Z(w)	E		DN	2	S
5	W06GIG-SM3021G	Geophysical Interpretation and Prospecting GK	2			2		K2_GIG_W02,W08,W09,W11,W15 K2_GIG_U04,U10,U13 K2_GIG_K02	60	100	4	3	3,0	T/Z(w)	E		DN	2	S
6	W06GIG-SM3022G	Geoelectric lectureship GK	2			2		K2_GIG_W02,W08,W10 K2_GIG_U04,U10 K2_GIG_K03	60	100	4		3,0	T/Z(w)	Z			2	S
7	W06GIG-SM3023G	Global environmental geophysics GK	1				1	K2_GIG_W02, W10,W12 K2_GIG_U01,U05,U08 K2_GIG_K03	30	50	2		1,7	T/Z(w)	Z			1	S
8	W06GIG-SM3024G	Non-metallic industrial minerals GK	2		2			K2_GIG_W02,W08,W10, K2_GIG_U07,U10 K2_GIG_K01	60	100	4	4	2,7	T/Z(w)	Z		DN	2	S
		Total	**15**		**4**	**7**	**1**		**405**	**750**	**30**		**20,2**					**15**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
15		**4**	**7**	**1**	**405**	**750**	**30**		**20,3**

Semester 3

Obligatory subjects / groups of classes (0 ECTS points)

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical [6]	Type[7]
1																			
		Total																	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Optional subjects / groups of classes Number of ECTS points 30

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3025G	Structural geology GK	1			2		K2_GIG_W02,W08,W10,W15 K2_GIG_U04,U07,U10,U13 K2_GIG_K03	45	100	4	4	2,4	T/Z(w)	E		DN	2	S
2	W06GIG-SM3026G	Mineral Deposits GK	2		1			K2_GIG_W08,W09,W10 K2_GIG_U01,U10,U13 K2_GIG_K03	45	100	4	4	2,2	T/Z(w)	E		DN	2	S
3	W06GIG-SM3027G	Engineering geology and hydrogeology GK	2		1			K2_GIG_W02,W08,W10,W14 K2_GIG_U04,U07U10,U13 K2_GIG_K03	45	100	4	4	2,2	T/Z(w)	E		DN	2	S
4	W06GIG-SM3028G	Analytical technics in mineralogy and petrology GK	1		1			K2_GIG_W02,W08,W10 K2_GIG_U04,U10,U13 K2_GIG_U_K03	30	50	2	2	1,5	T/Z(w)	Z		DN	1	S
5	W06GIG-SM3029G	Geochemical prospecting methods GK	1			2		K2_GIG_W02,W08,W10 K2_GIG_U04,U10,U13 K2_GIG_K02	45	100	4	4	2,3	T/Z(w)	Z		DN	2	S
6	W06GIG-SM3030G	Geological mapping GK	1			2		K2_GIG_W08,W10,W11 K2_GIG_U04,U10 K2_GIG_K03	45	100	4	4	2,4	T/Z(w)	E		DN	2	S
7	W06GIG-SM3031S	Graduate research seminar					2	K2_GIG_W01,W07,W10 K2_GIG_U01,U08,U13 K2_GIG_K02	30	50	2	2	1,4	T/Z(w)	Z		DN	2	S
8	W06GIG-SM3032P	Student research project				6		K2_GIG_W01,W08,W10,W12 K2_GIG_U01,U07,U08,U10,U13 K2_GIG_K01,K02	90	150	6	4	3,9	T/Z(w)	Z		DN	6	S
		Total	**8**		**2**	**12**	**3**		**375**	**750**	**30**		**18,3**					**19**	

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
8		**2**	**12**	**3**	**375**	**750**	**30**		**18,3**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Semester 4

Obligatory subjects / groups of classes Number of ECTS points 9

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3012G	Exploration Entrepreneurship GK	1			1	2	K2_GIG_W03,W05,W09 K2_GIG_U08,U09 K2_GIG_K01,K02,K03	60	100	4		3,0	Z	Z			P(3)	S
2	W06GIG-SM3013P	SOC Internship				2		K2_GIG_W05,W09 K2_GIG_U08,U09 K2_GIG_K01,K02,K03	30	50	2		1,5	T	Z			P(2)	S
3	W06GIG-SM3016P	Applied Field Exploration				3		K2_GIG_W08,W15 K2_GIG_U04,U09,U10,U13 K2_GIG_K02	45	75	3	1	2,1	T	Z		DN	P(3)	S
		Total	**1**	**0**	**0**	**6**	**2**		**135**	**225**	**9**	**1**	**6,6**					**8**	

Optional subjects / groups of classes (21 ECTS points)

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3014S	Diploma Seminar					1	K2_GIG_W01 K2_GIG_U01,U13 K2_GIG_K02,K03	15	25	1	1	0,8	T	Z		DN	P(1)	S
2	W06GIG-SM3015D	Master Thesis				1		K2_GIG_W01,W05,W10 K2_GIG_U01,U04,U08,U10,U13,U15 K2_GIG_K01,K02,K03	15	500	20	20	1,8	T	Z		DN	P (20)	S
		Total	**0**	**0**	**0**	**1**	**1**		**30**	**525**	**21**	**21**	**2,6**					**21**	

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
1	**0**	**0**	**7**	**3**	**165**	**750**	**30**	**22**	**9,2**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2. Set of examinations in semestral arrangement

Course / group of courses code	Names of courses / groups of courses ending with examination	Semester
W06GIG-SM3003G W06GIG-SM3007	1. Project Management, Appraisal and Risk Evaluation 2. Principles and Applications of InSAR in Mining	1 1
W06GIG-SM3017G W06GIG-SM3018G W06GIG-SM3019G W06GIG-SM3020G W06GIG-SM3021G	1. Physical Geology 2. Mineralogy and Geochemistry 3. Geophisical Exploration Methods I 4. Geological Interpretation and Prospecting 5. Geophysical Interpretation and Prospecting	2 2 2 2 2
W06GIG-SM3025G W06GIG-SM3026G W06GIG-SM3027G W06GIG-SM3030G	1. Structural geology 2. Mineral Deposits 3. Engineering geology and hydrogeology 4. Geological mapping	3 3 3 3
	Final diploma examination	4

3. Numbers of allowable deficit of ECTS points after particular semesters

Semester	Allowable deficit of ECTS points after semester
1	12
2	8
3	0

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Opinion of student government legislative body

POLITECHNIKA WROCŁAWSKA
WYDZIAŁ GEOINŻYNIERII
GÓRNICTWA I GEOLOGII
Samorząd Studencki Wydziału Geoinżynierii,
Górnictwa i Geologii
50-421 Wrocław, Na Grobli 15, pokój 370

28.09.23 ..... Jakub Dobrzański .....

Jakub Dobrzański
Chairman of the Student Government
of the Faculty of Geoengineering, Mining and Geology

Date — Name and surname, signature of student representative

DZIEKAN

28.09.23 ..... prof. dr hab. inż. Radosław Zimroz (1) .....

Date — Dean's signature

FACULTY: **of Geoengineering, Mining and Geology**

MAIN FIELD OF STUDY: **Mining and Geology**

LANGUAGE OF STUDY: English

SPECIALIZATION: **Mineral Resources Exploration**

- Track: UNI ZAGREB -WUST

Zał. nr 3 do ZW 78/2023

Attachment no. 2. to the Program of Studies

DESCRIPTION OF THE PROGRAM OF STUDIES

Main field of study MINING AND GEOLOGY
Profile general academic
Level of studies second level studies
Form of studies full-time studies

1. General description

1.1 Number of semesters: 4	*1.2 Total number of ECTS points necessary to complete studies at a given level: 120*
1.3 Total number of hours: 1395	*1.4 Prerequisites (particularly for second-level studies): Bachelor of Science in Engineering diploma, interview*
1.5 Upon completion of studies graduate obtains *professional degree of: **magister inżynier** - 2nd degree qualifications*	*1.6 Graduate profile, employability:* *The program will train T-shaped earth science specialists having a strong background in classical disciplines of geology and geophysics complemented with modern 3D modelling as well as data processing and interpretation skills, while the boundary-crossing competences will cover skills in innovative mineral exploration techniques and technologies used in the field, in laboratories, in an underground and underwater environment. Students will also be trained in sustainability, social responsibility and social licence to operate. T-shaped mineral explorers will use Industry 4.0-derived tools and methods for mineral resource exploration, mentored by experts.* *They will be prepared to work in enterprises, technical supervision institutions, public state and local administration, in research and development organisations, in Poland and*

	abroad, will also be prepared to start own business or work as free lanced exploration geologists. The graduates will be able to use English freely and will be prepared to work in an international environment and intercultural groups during their professional career.
1.7 Possibility of continuing studies: *eligibility to apply for admission to a doctoral school, non-degree postgraduate programmes*	*1.8 Indicate connection with University's mission and its development strategy:* *The study programs of all specializations within the field of study Mining and Geology respond to the strategic goals of the University (Strategia Politechniki Wrocławskiej 2023–2030), by rising the level of correlation of the study offer with the needs of the market (C3), by enhancing the quality of education through didactic interdisciplinarity and by cooperation with industrial partners as well as increasing the level of entrepreneurship, creativity and involvement of students in research processes (C4, C2). Graduates of the faculty should be creative, professional, have theoretical background and practical abilities, as well as have interpersonal skills and cross-cultural experience (C5).* *The Faculty of Geoengineering, Mining and Geology, as one of the units of the Wrocław University of Science and Technology, educates in the field of engineering, broadened by knowledge in natural and economic sciences. The profile and quality of education are at the international level and are adapted to the needs of the national and global mineral industries.*

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2. **Detailed description**

2.1 Total number of learning outcomes in the program of study: W (knowledge) = 19, U (skills) = 15, K (competences) = 3, W + U + K = 37

~~**2.2 For the main field of study assigned to more than one discipline - the number of learning outcomes assigned to the discipline:**~~

~~**D1 (major) ..... (this number must be greater than half the total number of learning outcomes)**~~

~~**D2 .....**~~

~~**D3 .....**~~

~~**D4 .....**~~

~~**2.3 For the main field of study assigned to more than one discipline - percentage share of the number of ECTS points for each discipline:**~~

~~**D1 .....% ECTS points**~~

~~**D2 .....% ECTS points**~~

~~**D3 .....% ECTS points**~~

~~**D4 .....% ECTS points**~~

2.4a. For the general academic profile of the main field of study – the number of ECTS points assigned to the classes related to the University's academic activity in the discipline or disciplines to which the main field of study is assigned – DN (must be greater than 50% of the total number of ECTS points from 1.2) 89 ECTS

2.4b. ~~For the practical profile of the main field of study - the number of ECTS points assigned to the classes shaping practical skills (must be greater than 50% of the total number of ECTS points from 1.2)~~

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2.5 Concise analysis of compliance of the assumed learning outcomes with the needs of the labor market

The economic development of the country is closely dependent on natural resources, the ability to use them and having appropriate engineering workforce. The assumed learning outcomes correspond to the needs of practice in the field of the generally understood management of mineral resources - technologies and techniques for their identification, valuation, extraction, processing, revitalization of industrial areas, and the practice of managing an enterprise (especially mining) in the sense of managing information, environment and people, using the latest IT and marketing techniques and methods. This integration of economic needs and assumed educational effects favorably shape the labor market for the graduates of the Faculty. Additionally, a good command of English and experience of working in an international group will open up the possibility of working in foreign branches of Polish enterprises and in foreign companies.

2.6. The total number of ECTS points that a student must obtain in classes requiring direct participation of academic teachers or other persons conducting classes and students (enter the sum of ECTS points for courses / groups of courses marked with the BU[1] code) **67,6 ECTS**

2.7. Total number of ECTS points, which student has to obtain from basic sciences classes

Number of ECTS points for obligatory subjects	5
Number of ECTS points for optional subjects	0
Total number of ECTS points	5

2.8. Total number of ECTS points, which student has to obtain from practical classes, including project and laboratory classes (enter total number of ECTS points for courses/group of courses denoted with code P)

Number of ECTS points for obligatory subjects	24
Number of ECTS points for optional subjects	60
Total number of ECTS points	84

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2.9. Minimum number of ECTS points, which student has to obtain doing education blocks offered as part of University-wide classes or other main field of study (enter number of ECTS points for courses/groups of courses denoted with code O)

3 ECTS points

2.10. Total number of ECTS points, which student may obtain doing optional blocks (min. 30% of total number of ECTS points)

84 ECTS points

3. Description of the process leading to learning outcomes acquisition:

1. Upon starting classes in each subject, the student has an appropriate level of knowledge and skills which constitute the prerequisites for a given course (it is verified by the teacher or the dean's office).
2. The student participates in classes organized at the university.
3. The student carries out the assigned work in class and at home (projects, computational tasks, analyzes, prepares presentations) and studies the literature and materials recommended by the teacher.
4. The student uses the appointed hours of the tutor's consultation, explaining his uncertainties and verifying the correct understanding of the course content.
5. The student participates in periodic tests of knowledge and skills, completes the tests available on the e-portal and is familiar with the correct answers, grades and comments from the teacher.
6. In some subjects, the student participates in group tasks, taking part in the organization of the group's work, assessment of the activities of individual participants and takes responsibility for the result of the group's work.
7. The student is encouraged to become involved in the work of research clubs, student organizations, discussion clubs, sports groups, participation in social life through work in public welfare organizations, voluntary work, thus gaining valuable interpersonal skills and social competences.
8. The student participates in meetings with companies from the industry, technical excursions, job fairs, tries to gain knowledge about the labor market and additional advantages when applying for a job
9. The student is encouraged to participate in an international student exchange, and through contact with foreigners at the faculty, he or she acquires additional interpersonal, cultural and language qualifications

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4. List of education blocks:

4.1. List of obligatory blocks:

4.1.1 List of general education blocks

4.1.1.1 *Liberal-managerial subjects* block *(7 ECTS points):*

No.	Subject / groups of classescode	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3003G	Project Management, Appraisal and Risk Evaluation (GK)	1		2	1		K2_GIG_W03,W05,W11 K2_GIG_U04,U06,U08,U15 K2_GIG_K01	60	100	4	4	3,1	T/Z(w)	E(w), Z(l,p)		DN	P (3)	KO
2	W06GIG-SM3000W	Operations Research w	1					K2_GIG_W06 K2_GIG_U10,U14 K2_GIG_K01	15	25	1	1	0,8	T /Z	Z		DN		KO
3	W06GIG-SM3000L	Operations Research l			1				15	50	2	2	0,7	T	Z		DN	P (2)	KO
		Total	**2**	**0**	**3**	**1**	**0**		**90**	**175**	**7**	**7**	**4,6**					**5**	

Altogether for general education blocks

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
2	**0**	**3**	**1**	**0**	**90**	**175**	**7**	**7**	**4,6**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.1.2 List of basic sciences blocks

4.1.2.1 *Mathematics* block

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3002W	Computer Aided Geological Modelling & Geostatistics (część: Geostatistics) w	1					K2_GIG_W06,W08,W15 K2_GIG_U04,U08,U14	15	50	2		0,8	T	Z				PD
2	W06GIG-SM3002L	Computer Aided Geological Modelling & Geostatistics (część: Geostatistics) l			1				15	25	1		0,6	T	Z			P (1)	PD
		Total	**1**	**0**	**1**	**0**	**0**		**30**	**75**	**3**		**1,4**					**1**	

4.1.2.3 *Physics block*

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3004W	Engineering Geophysics w	1					K2_GIG_W02,W08,W10 K2_GIG_U04,U13	15	25	1	1	0,8	T /Z	Z		DN		PD
2	W06GIG-SM3004P	Engineering Geophysics p				1			15	50	2	2	0,9	T	Z		DN	P(2)	PD
		Total	**2**	**0**	**0**	**0**	**0**		**30**	**75**	**3**	**3**	**1,7**					**2**	

Altogether for basic sciences blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
3	**0**	**1**	**0**	**0**	**60**	**150**	**6**	**3**	**3,1**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.1.3 List of the main field of study blocks

4.1.3.1 *Obligatory main field of study* blocks

No.	Subject / groups of classesco de	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/gr oup of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] clas ses	BU[1] clas ses			Univ ersity-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3002L	Computer Aided Geological Modelling & Geostatistics (Część: Computer Aided Geological Modelling)			2			K2_GIG_W06,W08,W15 K2_GIG_U04,U08,U14	30	50	2	2	1,3	T	Z		DN	P(2)	K
2	W06GIG-SM3006W	Digital Mine w	1					K2_GIG_W07,W12,W18,W19 K2_GIG_U04,U07,U08	15	25	1	1	0,8	T /Z(w)	Z		DN		K
3	W06GIG-SM3006L	Digital Mine l			1				15	25	1	1	0,8	T	Z		DN	P(1)	K
4	W06GIG-SM3005W	Occupational Health and Safety w	1					K2_GIG_W11,W12,W14,W17 K2_GIG_U11, K2_GIG_K02, K03	15	25	1	1	0,7	T /Z(w)	Z		DN		K
5	W06GIG-SM3005P	Occupational Health and Safety p				1			15	25	1	1	0,8	T	Z		DN	P(1)	K
6	W06GIG-SM3007W	Principles and Application of InSAR and GIS in mining w	2					K2_GIG_W15,W16,W18 K2_GIG_U04,U07,U08	30	50	2	2	1,4	T/Z(w)	E		DN		K
7	W06GIG-SM3007L	Principles and Application of InSAR and GIS in mining l			3				45	75	3	3	2,0	T	Z		DN	P(3)	K
8	W06GIG-SM3001W	Environmental Management w	2					K2_GIG_W04,W12,W13,W18 K2_GIG_U05,U10,U11 K2_GIG_K02,K03	30	50	2	2	1,3	T /Z(w)	Z		DN		K
9	W06GIG-SM3001S	Environmental Management s					1		15	25	1	1	0,8	T	Z		DN	P(1)	K
10	W06GIG-SM3012G	Exploration Entrepreneurship GK	1			1	2	K2_GIG_W03,W05,W09 K2_GIG_U08,U09 K2_GIG_K01,K02,K03	60	100	4		3,0	Z	Z			P(3)	S
11	W06GIG-SM3013P	SOC Internship				2		K2_GIG_W05,W09 K2_GIG_U08,U09 K2_GIG_K01,K02,K03	30	50	2		1,5	T	Z			P(2)	S
12	W06GIG-SM3016P	Applied Field Exploration				3		K2_GIG_W08,W15 K2_GIG_U04,U09,U10,U13 K2_GIG_K02	45	75	3	1	2,1	T	Z		DN	P(3)	S
		Total	**7**	**0**	**6**	**7**	**3**		**345**	**575**	**23**	**15**	**16,5**					**16**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Altogether (for main field of study blocks):

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
7	**0**	**6**	**7**	**3**	**345**	**575**	**24**	**16**	**16,5**

4.2 List of optional blocks

4.2.1 List of general education blocks

4.2.1.2 *Foreign languages* block *(min. 3 ECTS points):*

No.	Subject / groups of classesco de	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/gr oup of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerni ng scientific activities[5]	Practical[6]	Type[7]
1	SJO-SM0003	Foreign Language 1		3				K2_GIG_ U03	45	60	2		1,6	T	Z	O		P (2)	KO
2	SJO-SM0004	Foreign Language 2		1				K2_GIG_U01,U02	15	30	1		0,6	T	Z	O		P(1)	KO
		Total	**0**	**4**	**0**	**0**	**0**		**60**	**90**	**3**		**2,2**					**3**	

Altogether for general education blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
0	**4**	**0**	**0**	**0**	**60**	**90**	**3**	**0**	**2,2**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.2.4 List of specialization blocks

4.2.4.1 *Specialization subjects (e.g. whole specialization)* blocks *(60 ECTS points):*

No.	Subject / groups of classescode	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3033G	Sedimentology GK	2			3		K2_GIG_W01,W02 K2_GIG_U01,U13 K2_GIG_K02	75	125	5	3	3,6	T/Z(w)	E		DN	3	S
2	W06GIG-SM3034G	Mineral deposits exploration GK	2			3		K2_GIG_W01, W08,W11,W15, K2_GIG_U01,U13 K2_GIG_K03	75	125	5	3	3,6	T/Z(w)	E		DN	3	S
3	W06GIG-SM3035G	Petroleum geology GK	2			3		K2_GIG_W01,W2,W08, W11, K2_GIG_U01,U4,U10,U13 K2_GIG_K03	75	125	5		3,6	T/Z(w)	E			3	S
4	W06GIG-SM3036G	Engineering geological investigations GK	2			2		K2_GIG_W2,W07, W10, K2_GIG_U01,U04,U10 K2_GIG_K03	60	125	5	3	3,0	T/Z(w)	E		DN	3	S
5	W06GIG-SM3037G	Exploration geochemistry GK	2			1		K2_GIG_W01,W02,W18 K2_GIG_U01,U04,U09,U10,U13 K2_GIG_K02	45	100	4	3	2,3	T/Z(w)	Z		DN	2	S
6	W06GIG-SM3038G	Remote sensing of mineral resources GK	1		1			K2_GIG_W01,W02,W08,W15 K2_GIG_U01,U04,U13,U15 K2_GIG_K03	30	75	3	3	1,5	T/Z(w)	E		DN	2	S
7	W06GIG-SM3039G	GIS in exploration of mineral resources GK	1		1			K2_GIG_W01,W02,W08,W14,W15 K2_GIG_U01,U04,U13,U15 K2_GIG_K01	30	75	3	3	1,5	T/Z(w)	Z		DN	2	S
8	W06GIG-SM3040G	Regional hydrogeology GK	2			2		K2_GIG_W01,W2,W10, W15 K2_GIG_U01,U4,U13 K2_GIG_K03	60	100	4	4	2,9	T/Z(w)	E		DN	2	S
9	W06GIG-SM3041G	Seismotectonics GK	2			1		K2_GIG_W2,W10, W14 K2_GIG_U01,U4,U10,U13 K2_GIG_K01	45	100	4	4	2,4	T/Z(w)	E		DN	2	S
10	W06GIG-SM3042G	Industrial mineral deposits and applications GK	2				2	K2_GIG_W1,W07, W12 K2_GIG_U01,U10,U13 K2_GIG_K01,K02	60	125	5	5	2,8	T/Z	E		DN	3	S
11	W06GIG-SM3043G	Analytical methods in ore deposits GK	2		2			K2_GIG_W1,W02, W10 K2_GIG_U02,U07,U13 K2_GIG_K01	60	125	5	4	2,8	T/Z(w)	E		DN	3	S
12	W06GIG-SM3044W	Geophysical exploration and mineral resources	2					K2_GIG_W1,W02, W08,W10 K2_GIG_K01	30	75	3	3	1,4	T/Z	E		DN		S
13	W06GIG-SM3045G	Analyses of mineral paragenesis GK	1		2			K2_GIG_W1,W02 K2_GIG_U01,U13 K2_GIG_K01	45	75	3		2,2	T/Z(w)	E			2	S
14	W06GIG-SM3046P	Field and laboratory practicum				8		K2_GIG_U01,U04,U13 K2_GIG_K02,K03	120	150	6	4	5,0	T	Z		DN	6	S
		Total	**23**	**0**	**6**	**23**	**2**		**810**	**1500**	**60**	**42**	**38,6**					**36**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.2.4.2 *Diploma (e.g. diploma profile)* **block** *(21 ECTS points):*

No.	Subject / groups of classescode	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3014S	Diploma Seminar					1	K2_GIG_W01 K2_GIG_U01,U13 K2_GIG_K03	15	25	1	1	0,8	T	Z		DN	P(1)	S
2	W06GIG-SM3015D	Master Thesis				1		K2_GIG_W01,W05,W10 K2_GIG_U01,U04,U08,U10,U13,U15 K2_GIG_K01,K03	15	500	20	20	1,8	T	Z		DN	P (20)	S
		Total	**0**	**0**	**0**	**1**	**1**		**30**	**525**	**21**	**21**	**2,6**					**21**	

Altogether for specialization blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
23	**0**	**6**	**24**	**3**	**840**	**2025**	**81**	**63**	**41,2**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.3 Training block - concerning principles of training crediting – attachment no. …

Opinion of the Advisory Faculty Council concerning the rules of crediting training block

Name of training			
Number of ECTS points	**Number of ECTS points for BU[1] classes**	**Training crediting mode**	**Code**

Training duration	Training objective
	Internship

4.4 „Diploma dissertation" block (*if it is foreseen at first level studies)*

Type of diploma dissertation	Licencjat / inżynier / magister / magister inżynier*	
Number of diploma dissertation semesters	**Number of ECTS points**	**Code**
1	**20**	
Character of diploma dissertation		
Literature survey, project, computer program, etc.		
Number of BU[1] ECTS points	**1,8**	

5. Ways of verifying assumed learning outcomes

Form of classes	Ways of verifying assumed learning outcomes
lecture	e.g. examination, progress/final test
class	e.g. progress/final test
laboratory	e.g. pretest, report from laboratory
project	e.g. project defence
seminar	e.g. participation in discussion, topic presentation, essay
training	e.g. report from training
diploma dissertation	prepared diploma dissertation

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

6. Range of diploma examination

1. Occupational risk assessment methods. Identification of harmful, dangerous and nuisance factors in the work environment.
2. Costs as the subject of cost accounting. Variable and fixed costs. Break even point.
3. Capital budgeting, evaluation of different methods
4. Liquidity vs profitability of a company. Ways of their evaluation
5. Environmental management systems
6. Characteristics of hazards for the natural environment resulting from human activities
7. Variogram and methods of its modelling
8. Kriging, its properties and types
9. Geophysical methods of exploration and identification of deposits.
10. Surface seismic methods. Reflective and refractive seismics.
11. Computer aided exploration and identification of deposits.
12. Decision models used in management.
13. Advances of technology & methods of future mining operations.
14. Aims, benefits, drawbacks of automation and industrial revolutions.
15. Applications of Interferometric Synthetic Aperture Radar.
16. Applications of map algebra and spatial statistics to determine surface deformation models
17. Facies cycles and sedimentary sequences
18. Basic features of modern and paleo - depositional environments
19. Geological methods of exploring mineral deposits.
20. Geological criteria in the exploration of mineral deposits
21. Calculation of mineral reserves
22. Examples of appropriate level of site investigations for the purpose of different types of studies and projects in geotechnical engineering.
23. Examples of potential geotechnical problems in different rock types in geotechnical engineering.
24. Basic principles of geochemical prospecting
25. Instrumental analytical methods of geochemical prospecting
26. Application of remote sensing in mineral exploration
27. Characteristics of electromagnetic radiation for the purposes of remote sensing of mineral resources
28. Applications of GIS software in mineral exploration
29. Stress types and distribution in Earth’s crust in respect to tectonic plate boundary types
30. Basic properties of global and local seismicity
31. Definition of the concept of scale in hydrogeology and its effect related to permeability properties
32. Basic concept of the Earth's thermal regime
33. Physicochemical and geological conditions for the formation of deposits of chosen industrial minerals

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

34. Types of deposits of industrial minerals
35. The most important analytical methods applied in mineral deposits investigation
36. Special geophysical methods of measurement and interpretation applied in the exploration of construction materials deposits and solid mineral raw materials
37. Mineral paragenesis of magmatic and metamorphic rocks and its interpretation
38. The ways of the origin of primary and secondary mineral parageneses in magmatic rocks.
39. Mining legislation. Categorisation and classification of mineral reserves.
40. Groundwater chemistry and its impact on water use and legislation
41. Hydrogeological objects (wells, piezometers), construction and use.
42. Definitions of terms: ore mineral and industrial mineral. Classifications of industrial minerals.

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

7. Requirements concerning deadlines for crediting subject/groups of subject for all courses in particular blocks

No.	Course / group of courses code	Name of course / group of courses	Crediting by deadline of... (number of semester)
1	W06GIG-SM3033G	Sedimentology GK	1-4
2	W06GIG-SM3034G	Mineral deposits exploration GK	1-4
3	W06GIG-SM3035G	Petroleum geology GK	1-4
4	W06GIG-SM3036G	Engineering geological investigations GK	1-4
5	W06GIG-SM3037G	Exploration geochemistry GK	1-4
6	W06GIG-SM3038G	Remote sensing of mineral resources GK	1-4
7	W06GIG-SM3039G	GIS in exploration of mineral resources GK	1-4
8	W06GIG-SM3040G	Regional hydrogeology GK	2-4
9	W06GIG-SM3041G	Seismotectonics GK	2-4
10	W06GIG-SM3042G	Industrial mineral deposits and applications GK	2-4
11	W06GIG-SM3043G	Analytical methods in ore deposits GK	2-4
12	W06GIG-SM3044W	Geophysical exploration and mineral resources	2-4
13	W06GIG-SM3045G	Analyses of mineral paragenesis GK	2-4
14	W06GIG-SM3046P	Field and laboratory practicum	2-4
15	W06GIG-SM3007	Principles and Application of InSAR and GIS in mining	3-4
16	W06GIG-SM3002	Computer Aided Geological Modelling & Geostatistics	3-4
17	W06GIG-SM3003G	Project Management, Appraisal and Risk Evaluation	3-4
18	W06GIG-SM3004	Engineering Geophysics	3-4
19	W06GIG-SM3001	Environmental Management	3-4
20	W06GIG-SM3005	Occupational Health and Safety	3-4
21	SJO-SM0003	Foreign language 1	3-4
22	SJO-SM0004	Foreign language 2	3-4
23	W06GIG-SM3006	Digital Mine	3-4
24	W06GIG-SM3000	Operations Research	3-4
27	W06GIG-SM3012G	Exploration Entrepreneurship	1-4
28	W06GIG-SM3013P	SOC Internship	1-4
29	W06GIG-SM3016P	Applied Field Exploration	1-4
30	W06GIG-SM3014S	Master Thesis	4
31	W06GIG-SM3015D	Diploma Seminar	4

8. Plan of studies (attachment no. 4)

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Approved by faculty student government legislative body:

POLITECHNIKA WROCŁAWSKA
WYDZIAŁ GEOINŻYNIERII
GÓRNICTWA I GEOLOGII
Samorząd Studencki Wydziału Geoinżynierii,
Górnictwa i Geologii
50-421 Wrocław, Na Grobli 15, pokój 370

Jakub Dobrzański

Jakub Dobrzański
Chairman of the Student Government
of the Faculty of Geoengineering, Mining and Geology

28.09.23
Date

.....
name and surname, signature of student representative

28.09.23
Date

DZIEKAN
prof. dr hab. inż. Radosław Zimroz

.....
Dean's signature

Zał. nr 4 do ZW 78/2023
Attachment no. 3 to Program of Studies

PLAN OF STUDIES

FACULTY: Geoengineering, Mining and Geology

MAIN FIELD OF STUDY: Mining and geology

EDUCATION LEVEL: second-level studies

FORM OF STUDIES: full-time studies

PROFILE: general academic

SPECIALIZATION: Mineral Resources Exploration - Track UNI ZAGREB-WUST

LANGUAGE OF STUDY: English

In effect since academic year 2023/24

	Winter		Summer		Winter		Summer	
semester	**1**	**ECTS**	**2**	**ECTS**	**3**	**ECTS**	**4**	**ECTS**
hours	UNIZG		UNIZG		WUST		WUST	
1	Sedimentology 20030 E W06GIG-SM3033G	5	Regional Hydrogeology 20020E W06GIG-SM3040G	4	Operations Research 10100Z W06GIG-SM3000	3	Exploration entrepreneurship (EFG) 10012 Z W06GIG-SM3012G	4
2								
3					Environmental Management 20001Z W06GIG-SM3001	3		
4								
5			Seismotectonics 20100E W06GIG-SM3041G	4			Diploma Seminar 00002Z SM3014S	1
6	Mineral Deposits Exploration 20030E W06GIG-SM3034G	5			Computer Aided Geological Modelling & Geostatistics 10300Z W06GIG- SM3002	5	Master Thesis 00010Z W06GIG-SM3015D	20
7								
8			Industrial Mineral Deposits and Applications 20002E W06GIG-SM3042G	5				
9								
10					Project Management, Appraisal and Risk Evaluation 10210E W06GIG- SM3003G	4		
11	Petroleum Geology 20030E W06GIG-SM3035G	5						
12			Analytical Methods in Ore Deposits 20200E W06GIG-SM3043G	5				
13							SOC Internship 00020 Z W06GIG-SM3013P	2
14					Engineering Geophysics 10010 Z W06GIG-SM3004	3		
15							Applied field exploration 00030Z W06GIG-SM3016P	3
16	Engineering Geological Investigations 20020E W06GIG-SM3036G	5	Geophysical Exploration of Mineral Resources 20000E W06GIG-SM3044W	3	Occupational Health and Safety 100100Z W06GIG-SM3005	2		
17								
18			Analyses of mineral paragenesis 10200E W06GIG-SM3045G	3	Foreign Language 1 03000 Z SJO-SM0003	2		
19								
20	Exploration Geochemistry 20010Z W06GIG-SM3037G	4	Field and laboratory practicum 00080 Z W06GIG-SM3046P	6	Digital Mine 10100 Z W06GIG- SM3006	2		
21								
22					Principles and Application of InSAR and GIS in mining 20300E W06GIG-SM3007	5		
23	Remote sensing of mineral resources 10100E W06GIG-SM3038G	3						
24								
25	GIS in Exploration of Mineral Resources 10100Z W06GIG-SM3039G	3						
26								
27					Foreign Language 2 01000 Z SJO- SM0004	1		
28								
Total ECTS		**30**		**30**		**30**		**30**

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[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

1. Set of obligatory and optional subjects and groups of classes in semestral arrangement

Semester 1

Obligatory subjects / groups of classes (0 ECTS points)

No.	Subject / groups of classescode	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1																			
		Total																	

Optional subjects / groups of classes Number of ECTS points 30

No.	Subject / groups of classescode	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-M3033G	Sedimentology GK	2			3		K2_GIG_W01,W02 K2_GIG_U01,U13 K2_GIG_K02	75	125	5	3	3,6	T/Z(w)	E		DN	3	S
2	W06GIG-SM3034G	Mineral deposits exploration GK	2			3		K2_GIG_W01, W08,W11,W15, K2_GIG_U01,U13 K2_GIG_K03	75	125	5	3	3,6	T/Z(w)	E		DN	3	S
3	W06GIG-SM3035G	Petroleum geology GK	2			3		K2_GIG_W01,W2,W08, W11, K2_GIG_U01,U4,U10,U13 K2_GIG_K03	75	125	5		3,6	T/Z(w)	E			3	S
4	W06GIG-SM3036G	Engineering geological investigations GK	2			2		K2_GIG_W2,W07, W10, K2_GIG_U01,U04,U10 K2_GIG_K03	60	125	5	3	3,0	T/Z(w)	E		DN	3	S
5	W06GIG-SM3037G	Exploration geochemistry GK	2			1		K2_GIG_W01,W02,W18 K2_GIG_U01,U04,U09,U10,U13 K2_GIG_K02	45	100	4	3	2,3	T/Z(w)	Z		DN	2	S
6	W06GIG-SM3038G	Remote sensing of mineral resources GK	1		1			K2_GIG_W01,W02,W08,W15 K2_GIG_U01,U04,U13,U15 K2_GIG_K03	30	75	3	3	1,5	T/Z(w)	E		DN	2	S
7	W06GIG-SM3039G	GIS in exploration of mineral resources GK	1		1			K2_GIG_W01,W02,W08,W14,W15 K2_GIG_U01,U04,U13,U15 K2_GIG_K01	30	75	3	3	1,5	T/Z(w)	Z		DN	2	S
		Total	**12**		**2**	**12**			**390**	**750**	**30**	**18**	**19,1**					**18**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
12		**2**	**12**		**390**	**750**	**30**	**18**	**19,1**

Semester 2

Obligatory subjects / groups of classes (0 ECTS points)

No.	Subject / groups of classescode	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1																			
		Total																	

Optional subjects / groups of classes Number of ECTS points 30

No.	Subject / groups of classescode	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3040G	Regional hydrogeology GK	2			2		K2_GIG_W01,W2,W10, W15 K2_GIG_U01,U4,U13 K2_GIG_K03	60	100	4	4	2,9	T/Z(w)	E		DN	2	S
2	W06GIG-SM3041G	Seismotectonics GK	2			1		K2_GIG_W2,W10, W14 K2_GIG_U01,U4,U10,U13 K2_GIG_K01	45	100	4	4	2,4	T/Z(w)	E		DN	2	S
3	W06GIG-SM3042G	Industrial mineral deposits and applications GK	2				2	K2_GIG_W1,W07, W12 K2_GIG_U01,U10,U13 K2_GIG_K01,K02	60	125	5	5	2,8	T/Z	E		DN	3	S
4	W06GIG-SM3043G	Analytical methods in ore deposits GK	2		2			K2_GIG_W1,W02, W10 K2_GIG_U02,U07,U13 K2_GIG_K01	60	125	5	4	2,8	T/Z(w)	E		DN	3	S
5	W06GIG-SM3044W	Geophysical exploration and mineral resources	2					K2_GIG_W1,W02, W08,W10 K2_GIG_K01	30	75	3	3	1,4	T/Z	E		DN		S
6	W06GIG-SM3045G	Analyses of mineral paragenesis GK	1		2			K2_GIG_W1,W02 K2_GIG_U01,U13 K2_GIG_K01	45	75	3		2,2	T/Z(w)	E			2	S
7	W06GIG-SM3046P	Field and laboratory practicum				8		K2_GIG_U01,U04,U13 K2_GIG_K02,K03	120	150	6	4	5,0	T	Z		DN	6	S
		Total	**11**		**4**	**11**	**2**		**420**	**750**	**30**	**24**	**19,5**					**18**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
11		**4**	**11**	**2**	**420**	**750**	**30**	**24**	**19,5**

Semester 3

Obligatory subjects / groups of classes Number of ECTS points 27

No.	Subject / groups of classescode	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3000W	Operations Research	1					K2_GIG_W06	15	25	1	1	0,8	T /Z	Z		DN		KO
2	W06GIG-SM3000L	Operations Research			1			K2_GIG_U10,U14 K2_GIG_K01	15	50	2	2	0,7	T	Z		DN	P (2)	KO
3	W06GIG-SM3002W	Computer Aided Geological Modelling & Geostatistics	1					K2_GIG_W06,W08,W15	15	50	2		0,8	T /Z	Z		DN		PD/K
4	W06GIG-SM3002L	Computer Aided Geological Modelling & Geostatistics			3			K2_GIG_U04,U08,U14	45	75	3	2	1,9	T	Z		DN	P (3)	PD/K
5	W06GIG-SM3003G	Project Management, Appraisal and Risk Evaluation (GK)	1		2	1		K2_GIG_W03,W05,W11 K2_GIG_U04,U06,U08,U15 K2_GIG_K01	60	100	4	4	3,1	T/Z(w)	E(w), Z(l,p)		DN	P (3)	KO
6	W06GIG-SM3001W	Environmental Management	2					K2_GIG_W04,W12,W13,W18	30	50	2	2	1,3	T /Z(w)	Z		DN		K
7	W06GIG-SM3001S	Environmental Management					1	K2_GIG_U05,U10,U11 K2_GIG_K02,K03	15	25	1	1	0,8	T	Z		DN	P(1)	K
8	W06GIG-SM3004W	Engineering Geophysics	1					K2_GIG_W02,W08,W10	15	25	1	1	0,8	T /Z	Z		DN		PD
9	W06GIG-SM3004P	Engineering Geophysics				1		K2_GIG_U04,U13	15	50	2	2	0,9	T	Z		DN	P(2)	PD
10	W06GIG-SM3007W	Principles and Application of InSAR and GIS in mining	2					K2_GIG_W15,W16,W18	30	50	2	2	1,4	T/Z(w)	E		DN		K
11	W06GIG-SM3007L	Principles and Application of InSAR and GIS in mining			3			K2_GIG_U04,U07,U08	45	75	3	3	2,0	T	Z		DN	P(3)	K
12	W06GIG-SM3005W	Occupational Health and Safety	1					K2_GIG_W11,W12,W14,W17	15	25	1	1	0,7	T /Z(w)	Z		DN		K
13	W06GIG-SM3005P	Occupational Health and Safety				1		K2_GIG_U11, K2_GIG_K02, K03	15	25	1	1	0,8	T	Z		DN	P(1)	K
14	W06GIG-SM3006W	Digital Mine	1					K2_GIG_W07,W12,W18,W19	15	25	1	1	0,8	T /Z(w)	Z		DN		K
15	W06GIG-SM3006L	Digital Mine			1			K2_GIG_U04,U07,U08	15	25	1	1	0,8	T	Z		DN	P(1)	K
		Total	**10**	**0**	**10**	**3**	**1**		**360**	**675**	**27**	**24**	**17,6**					**16**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Optional subjects / groups of classes (3 ECTS points)

No.	Subject / groups of classescode	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU1 classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	SJO-SM0003	Foreign Language 1		3				K2_GIG_ U03	45	60	2		1,6	T	Z	O		P(2)	KO
2	SJO-SM0004	Foreign Language 2		1				K2_GIG_U01,U02	15	30	1		0,6	T	Z	O		P(1)	KO
		Total	**0**	**4**	**0**	**0**			**60**	**90**	**3**	**0**	**2,2**					**3**	

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
10	**4**	**10**	**3**	**1**	**420**	**765**	**30**	**24**	**19,8**

Semester 4

Obligatory subjects / groups of classes Number of ECTS points 9

No.	Subject / groups of classescode	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3012G	Exploration Entrepreneurship GK	1			1	2	K2_GIG_W03,W05,W09 K2_GIG_U08,U09 K2_GIG_K01,K02,K03	60	100	4		3,0	Z	Z			P(3)	S
2	W06GIG-SM3013P	SOC Internship				2		K2_GIG_W05,W09 K2_GIG_U08,U09 K2_GIG_K01,K02,K03	30	50	2		1,5	T	Z			P(2)	S
3	W06GIG-SM3016P	Applied Field Exploration				3		K2_GIG_W08,W15 K2_GIG_U04,U09,U10,U13 K2_GIG_K02	45	75	3	1	2,1	T	Z		DN	P(3)	S
		Total	**1**	**0**	**0**	**6**	**2**		**135**	**225**	**9**	**1**	**6,6**					**8**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Optional subjects / groups of classes (21 ECTS points)

No.	Subject / groups of classescode	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical [6]	Type[7]
1	W06GIG-SM3014S	Diploma Seminar					1	K2_GIG_W01 K2_GIG_U01,U13 K2_GIG_K02,K03	15	25	1	1	0,8	T	Z		DN	P(1)	S
2	W06GIG-SM3015D	Master Thesis				1		K2_GIG_W01,W05,W10 K2_GIG_U01,U04,U08,U10,U13,U15 K2_GIG_K01,K02,K03	15	500	20	20	1,8	T	Z		DN	P (20)	S
		Total	**0**	**0**	**0**	**1**	**1**		**30**	**525**	**21**	**21**	**2,6**					**21**	

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
1	**0**	**0**	**7**	**3**	**165**	**750**	**30**	**22**	**9,2**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2. Set of examinations in semestral arrangement

Course / group of courses code	Names of subjects / groups of classes ending with examination	Semester
W06GIG-SM3033G	1. Sedimentology	1
W06GIG-SM3034G	2. Mineral deposits exploration	1
W06GIG-SM3035G	3. Petroleum geology	1
W06GIG-SM3036G	4. Engineering geological investigations	1
W06GIG-SM3038G	5. Remote sensing of mineral resources	1
W06GIG-SM3040G	1. Regional hydrogeology	2
W06GIG-SM3041G	2. Seismotectonics	2
W06GIG-SM3042G	3. Industrial mineral deposits and applications	2
W06GIG-SM3043G	4. Analytical methods in ore deposits	2
W06GIG-SM3044W	5. Geophysical exploration and mineral resources	2
W06GIG-SM3045G	6. Analyses of mineral paragenesis	
W06GIG-SM3003G	1. Project Management, Appraisal and Risk Evaluation	3
W06GIG-SM3007	2. Principles and Application of InSAR and GIS in mining	3
	Final diploma examination	4

3. Numbers of allowable deficit of ECTS points after particular semesters

Semester	Allowable deficit of ECTS points after semester
1	12
2	8
3	0

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Opinion of student government legislative body

POLITECHNIKA WROCŁAWSKA
WYDZIAŁ GEOINŻYNIERII
GÓRNICTWA I GEOLOGII
Samorząd Studencki Wydziału Geoinżynierii,
Górnictwa i Geologii
50-421 Wrocław, Na Grobli 15, pokój 370

28.09.23 ..... Jakub Dobrzański .....

Jakub Dobrzański
Chairman of the Student Government
of the Faculty of Geoengineering, Mining and Geology

Date — Name and surname, signature of student representative

DZIEKAN

28.09.23 ..... prof. dr hab. inż. Radosław Zimroz (1) .....

Date — Dean's signature

FACULTY: **of Geoengineering, Mining and Geology**

MAIN FIELD OF STUDY: **Mining and Geology**

LANGUAGE OF STUDY: English

SPECIALIZATION: **Mineral Resources Exploration**

- Track: WUST - UNI ZAGREB

Zał. nr 3 do ZW 78/2023

Attachment no. 2. to the Program of Studies

DESCRIPTION OF THE PROGRAM OF STUDIES

Main field of study MINING AND GEOLOGY
Profile general academic
Level of studies second level studies
Form of studies full-time studies

1. General description

1.1 Number of semesters: 4	*1.2 Total number of ECTS points necessary to complete studies at a given level: 120*
1.3 Total number of hours: 1395	*1.4 Prerequisites (particularly for second-level studies): Bachelor of Science in Engineering diploma, interview*
1.5 Upon completion of studies graduate obtains *professional degree of: **magister inżynier** - 2nd degree qualifications*	*1.6 Graduate profile, employability:* *The program will train T-shaped earth science specialists having a strong background in classical disciplines of geology and geophysics complemented with modern 3D modelling as well as data processing and interpretation skills, while the boundary-crossing competences will cover skills in innovative mineral exploration techniques and technologies used in the field, in laboratories, in an underground and underwater environment. Students will also be trained in sustainability, social responsibility and social licence to operate. T-shaped mineral explorers will use Industry 4.0-derived tools and methods for mineral resource exploration, mentored by experts.* *They will be prepared to work in enterprises, technical supervision institutions, public state and local administration, in research and development organisations, in Poland and*

	abroad, will also be prepared to start own business or work as free lanced exploration geologists. The graduates will be able to use English freely and will be prepared to work in an international environment and intercultural groups during their professional career.
1.7 Possibility of continuing studies: *eligibility to apply for admission to a doctoral school, non-degree postgraduate programmes*	*1.8 Indicate connection with University's mission and its development strategy:* *The study programs of all specializations within the field of study Mining and Geology respond to the strategic goals of the University (Strategia Politechniki Wrocławskiej 2023–2030), by rising the level of correlation of the study offer with the needs of the market (C3), by enhancing the quality of education through didactic interdisciplinarity and by cooperation with industrial partners as well as increasing the level of entrepreneurship, creativity and involvement of students in research processes (C4, C2). Graduates of the faculty should be creative, professional, have theoretical background and practical abilities, as well as have interpersonal skills and cross-cultural experience (C5).* *The Faculty of Geoengineering, Mining and Geology, as one of the units of the Wrocław University of Science and Technology, educates in the field of engineering, broadened by knowledge in natural and economic sciences. The profile and quality of education are at the international level and are adapted to the needs of the national and global mineral industries.*

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2. Detailed description

2.1 Total number of learning outcomes in the program of study: W (knowledge) = 19, U (skills) = 15, K (competences) = 3, W + U + K = 37

~~**2.2 For the main field of study assigned to more than one discipline - the number of learning outcomes assigned to the discipline:**~~

~~**D1 (major) ..... (this number must be greater than half the total number of learning outcomes)**~~

~~**D2 .....**~~

~~**D3 .....**~~

~~**D4 .....**~~

~~**2.3 For the main field of study assigned to more than one discipline - percentage share of the number of ECTS points for each discipline:**~~

~~**D1 .....% ECTS points**~~

~~**D2 .....% ECTS points**~~

~~**D3 .....% ECTS points**~~

~~**D4 .....% ECTS points**~~

2.4a. For the general academic profile of the main field of study – the number of ECTS points assigned to the classes related to the University's academic activity in the discipline or disciplines to which the main field of study is assigned – DN (must be greater than 50% of the total number of ECTS points from 1.2) 88 ECTS

2.4b. ~~For the practical profile of the main field of study - the number of ECTS points assigned to the classes shaping practical skills (must be greater than 50% of the total number of ECTS points from 1.2)~~

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2.5 Concise analysis of compliance of the assumed learning outcomes with the needs of the labor market

The economic development of the country is closely dependent on natural resources, the ability to use them and having appropriate engineering workforce. The assumed learning outcomes correspond to the needs of practice in the field of the generally understood management of mineral resources - technologies and techniques for their identification, valuation, extraction, processing, revitalization of industrial areas, and the practice of managing an enterprise (especially mining) in the sense of managing information, environment and people, using the latest IT and marketing techniques and methods. This integration of economic needs and assumed educational effects favorably shape the labor market for the graduates of the Faculty. Additionally, a good command of English and experience of working in an international group will open up the possibility of working in foreign branches of Polish enterprises and in foreign companies.

2.6. The total number of ECTS points that a student must obtain in classes requiring direct participation of academic teachers or other persons conducting classes and students (enter the sum of ECTS points for courses / groups of courses marked with the BU[1] code) **67,6 ECTS**

2.7. Total number of ECTS points, which student has to obtain from basic sciences classes

Number of ECTS points for obligatory subjects	6
Number of ECTS points for optional subjects	0
Total number of ECTS points	6

2.8. Total number of ECTS points, which student has to obtain from practical classes, including project and laboratory classes (enter total number of ECTS points for courses/group of courses denoted with code P)

Number of ECTS points for obligatory subjects	24
Number of ECTS points for optional subjects	60
Total number of ECTS points	84

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2.9. Minimum number of ECTS points, which student has to obtain doing education blocks offered as part of University-wide classes or other main field of study (enter number of ECTS points for courses/groups of courses denoted with code O)

3 ECTS points

2.10. Total number of ECTS points, which student may obtain doing optional blocks (min. 30% of total number of ECTS points)

84 ECTS points

3. Description of the process leading to learning outcomes acquisition:

1. Upon starting classes in each subject, the student has an appropriate level of knowledge and skills which constitute the prerequisites for a given course (it is verified by the teacher or the dean's office).
2. The student participates in classes organized at the university.
3. The student carries out the assigned work in class and at home (projects, computational tasks, analyzes, prepares presentations) and studies the literature and materials recommended by the teacher.
4. The student uses the appointed hours of the tutor's consultation, explaining his uncertainties and verifying the correct understanding of the course content.
5. The student participates in periodic tests of knowledge and skills, completes the tests available on the e-portal and is familair with the correct answers, grades and comments from the teacher.
6. In some subjects, the student participates in group tasks, taking part in the organization of the group's work, assessment of the activities of individual participants and takes responsibility for the result of the group's work.
7. The student is encouraged to become involved in the work of research clubs, student organizations, discussion clubs, sports groups, participation in social life through work in public welfare organizations, voluntary work, thus gaining valuable interpersonal skills and social competences.
8. The student participates in meetings with companies from the industry, technical excursions, job fairs, tries to gain knowledge about the labor market and additional advantages when applying for a job
9. The student is encouraged to participate in an international student exchange, and through contact with foreigners at the faculty, he or she acquires additional interpersonal, cultural and language qualifications

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4. List of education blocks:

4.1. List of obligatory blocks:

4.1.1 List of general education blocks

4.1.1.1 *Liberal-managerial subjects* block *(7 ECTS points):*

No.	Subject/ group of classes code	Name of subject/group of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3003G	Project Management, Appraisal and Risk Evaluation (GK)	1		2	1		K2_GIG_W03,W05,W11 K2_GIG_U04,U06,U08,U15 K2_GIG_K01	60	100	4	4	3,1	T/Z(w)	E(w), Z(l,p)		DN	P (3)	KO
2	W06GIG-SM3000W	Operations Research	1					K2_GIG_W06 K2_GIG_U10,U14 K2_GIG_K01	15	25	1	1	0,8	T /Z	Z		DN		KO
3	W06GIG-SM3000L	Operations Research			1				15	50	2	2	0,7	T	Z		DN	P (2)	KO
		Total	**2**	**0**	**3**	**1**	**0**		**90**	**175**	**7**	**7**	**4,6**					**5**	

Altogether for general education blocks

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
2	**0**	**3**	**1**	**0**	**90**	**175**	**7**	**7**	**4,6**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.1.2 List of basic sciences blocks

4.1.2.1 *Mathematics* block

No.	Subject/ group of classes code	Name of subject/group of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3003G	Computer Aided Geological Modelling & Geostatistics (część: Geostatistics)	1					K2_GIG_W06,W08,W15	15	50	2		0,8	T	Z				PD
2	W06GIG-SM3000W	Computer Aided Geological Modelling & Geostatistics (część: Geostatistics)			1			K2_GIG_U04,U08,U14	15	25	1		0,6	T	Z			P (1)	PD
		Total	**1**	**0**	**1**	**0**	**0**		**30**	**75**	**3**		**1,4**					**1**	

4.1.2.3 *Physics block*

No.	Subject/ group of classes code	Name of subject/group of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3004W	Engineering Geophysics	1					K2_GIG_W02,W08,W10	15	25	1	1	0,8	T /Z	Z		DN		PD
	W06GIG-SM3004P	Engineering Geophysics				1		K2_GIG_U04,U13	15	50	2	2	0,9	T	Z		DN	P(2)	PD
		Total	**2**	**0**	**0**	**0**	**0**		**30**	**75**	**3**	**3**	**1,7**					**2**	

Altogether for basic sciences blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
3	**0**	**1**	**0**	**0**	**60**	**150**	**6**	**3**	**3,1**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.1.3 List of the main field of study blocks

4.1.3.1 *Obligatory main field of study* blocks

No.	Subject/ group of classes code	Name of subject/group of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3002L	Computer Aided Geological Modelling & Geostatistics (Część: Computer Aided Geological Modelling)			2			K2_GIG_W06,W08,W15 K2_GIG_U04,U08,U14	30	50	2	2	1,3	T	Z		DN	P(2)	K
2	W06GIG-SM3006W	Digital Mine	1					K2_GIG_W07,W12,W18,W19 K2_GIG_U04,U07,U08	15	25	1	1	0,8	T /Z(w)	Z		DN		K
3	W06GIG-SM3006L	Digital Mine			1				15	25	1	1	0,8	T	Z		DN	P(1)	K
4	W06GIG-SM3005W	Occupational Health and Safety	1					K2_GIG_W11,W12,W14,W17 K2_GIG_U11, K2_GIG_K02, K03	15	25	1	1	0,7	T /Z(w)	Z		DN		K
5	W06GIG-SM3005P	Occupational Health and Safety				1			15	25	1	1	0,8	T	Z		DN	P(1)	K
6	W06GIG-SM3007W	Principles and Application of InSAR and GIS in mining	2					K2_GIG_W15,W16,W18 K2_GIG_U04,U07,U08	30	50	2	2	1,4	T/Z(w)	E		DN		K
7	W06GIG-SM3007L	Principles and Application of InSAR and GIS in mining			3				45	75	3	3	2,0	T	Z		DN	P(3)	K
8	W06GIG-SM3001W	Environmental Management	2					K2_GIG_W04,W12,W13,W18 K2_GIG_U05,U10,U11,U12 K2_GIG_K02,K03	30	50	2	2	1,3	T /Z(w)	Z		DN		K
9	W06GIG-SM3001S	Environmental Management					1		15	25	1	1	0,8	T	Z		DN	P(1)	K
10	W06GIG-SM3012G	Exploration Entrepreneurship GK	1			1	2	K2_GIG_W03,W05,W09 K2_GIG_U08,U09 K2_GIG_K01,K02,K03	60	100	4		3,0	Z	Z			P(3)	S
11	W06GIG-SM3013P	SOC Internship				2		K2_GIG_W05,W09 K2_GIG_U08,U09 K2_GIG_K01,K02,K03	30	50	2		1,5	T	Z			P(2)	S
12	W06GIG-SM3016P	Applied Field Exploration				3		K2_GIG_W08,W15 K2_GIG_U04,U09,U10,U13 K2_GIG_K02	45	75	3	1	2,1	T	Z		DN	P(3)	S
		Total	**7**	**0**	**6**	**7**	**3**		**345**	**575**	**23**	**15**	**16,5**					**16**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Altogether (for main field of study blocks):

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
7	**0**	**6**	**7**	**3**	**345**	**575**	**23**	**15**	**16,5**

4.2 List of optional blocks

4.2.1 List of general education blocks

4.2.1.2 *Foreign languages* block *(min. 3 ECTS points):*

No.	Subject/ group of classes code	Name of subject/group of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	SJO-SM0003	Foreign Language 1		3				K2_GIG_ U03	45	60	2		1,6	T	Z	O		P (2)	KO
2	SJO-SM0004	Foreign Language 2		1				K2_GIG_U01,U02	15	30	1		0,6	T	Z	O		P(1)	KO
		Total	**0**	**4**	**0**	**0**	**0**		**60**	**90**	**3**		**2,2**					**3**	

Altogether for general education blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
0	**4**	**0**	**0**	**0**	**60**	**90**	**3**	**0**	**2,2**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.2.4 List of specialization blocks

4.2.4.1 *Specialization subjects (e.g. whole specialization)* blocks *(60 ECTS points):*

No.	Subject/ group of classes code	Name of subject/group of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3033G	Sedimentology GK	2			3		K2_GIG_W01,W02 K2_GIG_U01,U13 K2_GIG_K02	75	125	5	3	3,6	T/Z(w)	E		DN	3	S
2	W06GIG-SM3034G	Mineral deposits exploration GK	2			3		K2_GIG_W01, W08,W11,W15, K2_GIG_U01,U13 K2_GIG_K03	75	125	5	3	3,6	T/Z(w)	E		DN	3	S
3	W06GIG-SM3035G	Petroleum geology GK	2			3		K2_GIG_W01,W2,W08, W11, K2_GIG_U01,U4,U10,U13 K2_GIG_K03	75	125	5		3,6	T/Z(w)	E			3	S
4	W06GIG-SM3036G	Engineering geological investigations GK	2			2		K2_GIG_W2,W07, W10, K2_GIG_U01,U04,U10 K2_GIG_K03	60	125	5	3	3,0	T/Z(w)	E		DN	3	S
5	W06GIG-SM3037G	Exploration geochemistry GK	2			1		K2_GIG_W01,W02,W18 K2_GIG_U01,U04,U09,U10,U13 K2_GIG_K02	45	100	4	3	2,3	T/Z(w)	Z		DN	2	S
6	W06GIG-SM3038G	Remote sensing of mineral resources GK	1		1			K2_GIG_W01,W02,W08,W15 K2_GIG_U01,U04,U13,U15 K2_GIG_K03	30	75	3	3	1,5	T/Z(w)	E		DN	2	S
7	W06GIG-SM3039G	GIS in exploration of mineral resources GK	1		1			K2_GIG_W01,W02,W08,W14,W15 K2_GIG_U01,U04,U13,U15 K2_GIG_K01	30	75	3	3	1,5	T/Z(w)	Z		DN	2	S
8	W06GIG-SM3040G	Regional hydrogeology GK	2			2		K2_GIG_W01,W2,W10, W15 K2_GIG_U01,U4,U13 K2_GIG_K03	60	100	4	4	2,9	T/Z(w)	E		DN	2	S
9	W06GIG-SM3041G	Seismotectonics GK	2			1		K2_GIG_W2,W10, W14 K2_GIG_U01,U4,U10,U13 K2_GIG_K01	45	100	4	4	2,4	T/Z(w)	E		DN	2	S
10	W06GIG-SM3042G	Industrial mineral deposits and applications GK	2				2	K2_GIG_W1,W07, W12 K2_GIG_U01,U10,U13 K2_GIG_K01,K02	60	125	5	5	2,8	T/Z	E		DN	3	S
11	W06GIG-SM3043G	Analytical methods in ore deposits GK	2		2			K2_GIG_W1,W02, W10 K2_GIG_U02,U07,U13 K2_GIG_K01	60	125	5	4	2,8	T/Z(w)	E		DN	3	S
12	W06GIG-SM3044W	Geophysical exploration and mineral resources	2					K2_GIG_W1,W02, W08,W10 K2_GIG_K01	30	75	3	3	1,4	T/Z	E		DN		S
13	W06GIG-SM3045G	Analyses of mineral paragenesis GK	1		2			K2_GIG_W1,W02 K2_GIG_U01,U13 K2_GIG_K01	45	75	3		2,2	T/Z(w)	E			2	S
14	W06GIG-SM3046P	Field and laboratory practicum				8		K2_GIG_U01,U04,U13 K2_GIG_K02,K03	120	150	6	4	5,0	T	Z		DN	6	S
		Total	**23**	**0**	**6**	**23**	**2**		**810**	**1500**	**60**	**42**	**38,6**					**36**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.2.4.2 *Diploma (e.g. diploma profile)* **block** *(21 ECTS points):*

No.	Subject/ group of classes code	Name of subject/group of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3014S	Diploma Seminar					1	K2_GIG_W01 K2_GIG_U01,U13 K2_GIG_K03	15	25	1	1	0,8	T	Z		DN	P(1)	S
2	W06GIG-SM3015D	Master Thesis				1		K2_GIG_W01,W05,W10 K2_GIG_U01,U04,U08,U10,U13,U15 K2_GIG_K01,K03	15	500	20	20	1,8	T	Z		DN	P (20)	S
		Total	**0**	**0**	**0**	**1**	**1**		**30**	**525**	**21**	**21**	**2,6**					**21**	

Altogether for specialization blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
23	**0**	**6**	**24**	**3**	**840**	**2025**	**81**	**63**	**41,2**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.3 Training block - concerning principles of training crediting – attachment no. …

Opinion of the Advisory Faculty Council concerning the rules of crediting training block

Name of training			
Number of ECTS points	**Number of ECTS points for BU[1] classes**	**Training crediting mode**	**Code**

Training duration	Training objective
	Internship

4.4 „Diploma dissertation" block (*if it is foreseen at first level studies)*

Type of diploma dissertation	Licencjat / inżynier / magister / magister inżynier*	
Number of diploma dissertation semesters	**Number of ECTS points**	**Code**
1	**20**	**W06GIG-SM3015D**
Character of diploma dissertation		
Literature survey, project, computer program, etc.		
Number of BU[1] ECTS points	**1,8**	

5. Ways of verifying assumed learning outcomes

Form of classes	Ways of verifying assumed learning outcomes
lecture	e.g. examination, progress/final test
class	e.g. progress/final test
laboratory	e.g. pretest, report from laboratory
project	e.g. project defence
seminar	e.g. participation in discussion, topic presentation, essay
training	e.g. report from training
diploma dissertation	prepared diploma dissertation

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

6. Range of diploma examination

1. Occupational risk assessment methods. Identification of harmful, dangerous and nuisance factors in the work environment.
2. Costs as the subject of cost accounting. Variable and fixed costs. Break even point.
3. Capital budgeting, evaluation of different methods
4. Liquidity vs profitability of a company. Ways of their evaluation
5. Environmental management systems
6. Characteristics of hazards for the natural environment resulting from human activities
7. Variogram and methods of its modelling
8. Kriging, its properties and types
9. Geophysical methods of exploration and identification of deposits.
10. Surface seismic methods. Reflective and refractive seismics.
11. Computer aided exploration and identification of deposits.
12. Decision models used in management.
13. Advances of technology & methods of future mining operations.
14. Aims, benefits, drawbacks of automation and industrial revolutions.
15. Applications of Interferometric Synthetic Aperture Radar.
16. Applications of map algebra and spatial statistics to determine surface deformation models
17. Facies cycles and sedimentary sequences
18. Basic features of modern and paleo - depositional environments
19. Geological methods of exploring mineral deposits.
20. Geological criteria in the exploration of mineral deposits
21. Calculation of mineral reserves
22. Examples of appropriate level of site investigations for the purpose of different types of studies and projects in geotechnical engineering.
23. Examples of potential geotechnical problems in different rock types in geotechnical engineering.
24. Basic principles of geochemical prospecting
25. Instrumental analytical methods of geochemical prospecting
26. Application of remote sensing in mineral exploration
27. Characteristics of electromagnetic radiation for the purposes of remote sensing of mineral resources
28. Applications of GIS software in mineral exploration
29. Stress types and distribution in Earth’s crust in respect to tectonic plate boundary types
30. Basic properties of global and local seismicity
31. Definition of the concept of scale in hydrogeology and its effect related to permeability properties
32. Basic concept of the Earth's thermal regime
33. Physicochemical and geological conditions for the formation of deposits of chosen industrial minerals

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

34. Types of deposits of industrial minerals
35. The most important analytical methods applied in mineral deposits investigation
36. Special geophysical methods of measurement and interpretation applied in the exploration of construction materials deposits and solid mineral raw materials
37. Mineral paragenesis of magmatic and metamorphic rocks and its interpretation
38. The ways of the origin of primary and secondary mineral parageneses in magmatic rocks.
39. Mining legislation. Categorisation and classification of mineral reserves.
40. Groundwater chemistry and its impact on water use and legislation
41. Hydrogeological objects (wells, piezometers), construction and use.
42. Definitions of terms: ore mineral and industrial mineral. Classifications of industrial minerals.

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

7. Requirements concerning deadlines for crediting courses/groups of courses for all courses in particular blocks

No.	Subject / group of classes code	Name of subject / group of classes	Crediting by deadline of... (number of semester)
1	W06GIG-SM3007	Principles and Application of InSAR and GIS in mining	1-4
2	W06GIG-SM3002	Computer Aided Geological Modelling & Geostatistics	1-4
3	W06GIG-SM3003G	Project Management, Appraisal and Risk Evaluation	1-4
4	W06GIG-SM3004	Engineering Geophysics	1-4
5	W06GIG-SM3001	Environmental Management	1-4
6	W06GIG-SM3005	Occupational Health and Safety	1-4
7	SJO-SM0003	Foreign language 1	1-4
8	SJO-SM0004	Foreign language 2	1-4
9	W06GIG-SM3006	Digital Mine	1-4
10	W06GIG-SM3000	Operations Research	1-4
11	W06GIG-SM3033G	Sedimentology GK	2-4
12	W06GIG-SM3034G	Mineral deposits exploration GK	2-4
13	W06GIG-SM3035G	Petroleum geology GK	2-4
14	W06GIG-SM3036G	Engineering geological investigations GK	2-4
15	W06GIG-SM3037G	Exploration geochemistry GK	2-4
16	W06GIG-SM3038G	Remote sensing of mineral resources GK	2-4
17	W06GIG-SM3039G	GIS in exploration of mineral resources GK	2-4
18	W06GIG-SM3040G	Regional hydrogeology GK	2-4
19	W06GIG-SM3041G	Seismotectonics GK	2-4
20	W06GIG-SM3042G	Industrial mineral deposits and applications GK	2-4
21	W06GIG-SM3043G	Analytical methods in ore deposits GK	2-4
22	W06GIG-SM3044W	Geophysical exploration and mineral resources	2-4
23	W06GIG-SM3045G	Analyses of mineral paragenesis GK	2-4
24	W06GIG-SM3046P	Field and laboratory practicum	2-4
27	W06GIG-SM3012G	Exploration Entrepreneurship	1-4
28	W06GIG-SM3013P	SOC Internship	1-4
29	W06GIG-SM3016P	Applied Field Exploration	1-4
30	W06GIG-SM3014S	Master Thesis	4
31	W06GIG-SM3015D	Diploma Seminar	4

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[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
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8. Plan of studies (attachment no. 4)

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Approved by faculty student government legislative body:

POLITECHNIKA WROCŁAWSKA
WYDZIAŁ GEOINŻYNIERII
GÓRNICTWA I GEOLOGII
Samorząd Studencki Wydziału Geoinżynierii,
Górnictwa i Geologii
50-421 Wrocław, Na Grobli 15, pokój 370

Jakub Dobrzański

Jakub Dobrzański
Chairman of the Student Government
of the Faculty of Geoengineering, Mining and Geology

28.09.23
Date

.....
name and surname, signature of student representative

28.09.23
Date

DZIEKAN
prof. dr hab. inż. Radosław Zimroz

.....
Dean's signature

Zał. nr 4 do ZW 78/2023
Attachment no. 3 to Program of Studies

PLAN OF STUDIES

FACULTY: Geoengineering, Mining and Geology

MAIN FIELD OF STUDY: Mining and geology

EDUCATION LEVEL: second-level studies

FORM OF STUDIES: full-time studies

PROFILE: general academic

SPECIALIZATION: Mineral Resources Exploration - Track WUST-UNI ZAGREB

LANGUAGE OF STUDY: English

In effect since academic year 2023/24

	Summer		Winter		Summer		Winter	
semester	**1**	**ECTS**	**2**	**ECTS**	**3**	**ECTS**	**4**	**ECTS**
hours	WUST		UNIZG		UNIZG		WUST	
1	Operations Research 10100Z W06GIG-SM3002	3	Sedimentology 20030 E W06GIG-SM3033G	5	Regional Hydrogeology 20020E W06GIG-SM3040G	4	Exploration entrepreneurship (EFG) 10012 Z W06GIG-SM3012G	4
2								
3	Environmental Management 20001Z W06GIG-SM3001	3						
4								
5					Seismotectonics 20100E W06GIG-SM3041G	4	Diploma Seminar 00001Z W06GIG-SM3014S	1
6	Computer Aided Geological Modelling & Geostatistics 10300Z W06GIG-SM3002	5	Mineral Deposits Exploration 20030E W06GIG-SM3034G	5				
7							Master Thesis 00010Z W06GIG-SM3015D	20
8					Industrial Mineral Deposits and Applications 20002E W06GIG-SM3042G	5		
9								
10	Project Management, Appraisal and Risk Evaluation 10210E W06GIG-SM3003G	4						
11								
12			Petroleum Geology 20030E W06GIG-SM3035G	5	Analythical Methods in Ore Deposits 20200E W06GIG-SM3043G	5		
13							SOC Internship 00020 Z W06GIG-SM3013P	2
14	Engineering Geophisics 10010 Z W06GIG-SM3004	3						
15							Applied field exploration 00030Z W06GIG-SM3016P	3
16	Occupational Health and Safety 100100Z W06GIG-SM3005	2	Engineering Geological Investigations 20020E W06GIG-SM3036G	5	Geophysical Exploration of Mineral Resources 20000E W06GIG-SM3044W	3		
17								
18	Foreign Language 1 03000 Z SJO-SM0003	2			Analyses of mineral paragenesis 10200E W06GIG-SM3045G	3		
19								
20			Exploration Geochemistry 20010Z W06GIG-SM3037G	4				
21	Digital Mine 10100 Z W06GIG-SM3006	2			Field and laboratory practicum 00080 Z W06GIG-SM3046P	6		
22								
23	Principles and Application of InSAR and GIS in mining 20300E W06GIG-SM3007	5	Remote sensing of mineral resources 10100E W06GIG-SM3038G	3				
24								
25			GIS in Exploration of Mineral Resources 10100Z W06GIG-SM3039G	3				
26								
27	Foreign Language 2 01000Z SJO-SM0004	1						
28								
Total ECTS		**30**		**30**		**30**		**30**

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[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

1. Set of obligatory and optional subjects and groups of classes in semestral arrangement

Semester 1

Obligatory subjects / groups of classes Number of ECTS points 27

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3000W	Operations Research	1					K2_GIG_W06 K2_GIG_U10,U14 K2_GIG_K01	15	25	1	1	0,8	T /Z	Z		DN		KO
2	W06GIG-SM3000L	Operations Research			1				15	50	2	2	0,7	T	Z		DN	P (2)	KO
3	W06GIG-SM3002W	Computer Aided Geological Modelling & Geostatistics	1					K2_GIG_W06,W08,W15 K2_GIG_U04,U08,U14	15	50	2		0,8	T /Z	Z				PD/K
4	W06GIG-SM3002L	Computer Aided Geological Modelling & Geostatistics			3				45	75	3	2	1,9	T	Z		DN	P (3)	PD/K
5	W06GIG-SM3003G	Project Management, Appraisal and Risk Evaluation (GK)	1		2	1		K2_GIG_W03,W05,W11 K2_GIG_U04,U06,U08,U15 K2_GIG_K01	60	100	4	4	3,1	T/Z(w)	E(w), Z(l,p)		DN	P (3)	KO
6	W06GIG-SM3001W	Environmental Management	2					K2_GIG_W04,W12,W13,W18 K2_GIG_U05,U10,U11,U12 K2_GIG_K02,K03	30	50	2	2	1,3	T /Z(w)	Z		DN		K
7	W06GIG-SM3001S	Environmental Management					1		15	25	1	1	0,8	T	Z		DN	P(1)	K
8	W06GIG-SM3004W	Engineering Geophysics	1					K2_GIG_W02,W08,W10 K2_GIG_U04,U13	15	25	1	1	0,8	T /Z	Z		DN		PD
9	W06GIG-SM3004P	Engineering Geophysics				1			15	50	2	2	0,9	T	Z		DN	P(2)	PD
10	W06GIG-SM3007W	Principles and Application of InSAR and GIS in mining	2					K2_GIG_W15,W16,W18 K2_GIG_U04,U07,U08	30	50	2	2	1,4	T/Z(w)	E		DN		K
11	W06GIG-SM3007L	Principles and Application of InSAR and GIS in mining			3				45	75	3	3	2,0	T	Z		DN	P(3)	K
12	W06GIG-SM3005W	Occupational Health and Safety	1					K2_GIG_W11,W12,W14,W17 K2_GIG_U11, K2_GIG_K02, K03	15	25	1	1	0,7	T /Z(w)	Z		DN		K
13	W06GIG-SM3005P	Occupational Health and Safety				1			15	25	1	1	0,8	T	Z		DN	P(1)	K
14	W06GIG-SM3006W	Digital Mine	1					K2_GIG_W07,W12,W18,W19 K2_GIG_U04,U07,U08	15	25	1	1	0,8	T /Z(w)	Z		DN		K
15	W06GIG-SM3006L	Digital Mine			1				15	25	1	1	0,8	T	Z		DN	P(1)	K
		Total	**10**	**0**	**10**	**3**	**1**		**360**	**675**	**27**	**24**	**17,6**					**16**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
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[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Optional subjects / groups of classes (3 ECTS points)

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	SJO-SM0003	Foreign Language 1		3				K2_GIG_ U03	45	60	2		1,6	T	Z	O		P(2)	KO
2	SJO-SM0004	Foreign Language 2		1				K2_GIG_U01,U02	15	30	1		0,6	T	Z	O		P(1)	KO
		Total	**0**	**4**	**0**	**0**			**60**	**90**	**3**	**0**	**2,2**					**3**	

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
10	**4**	**10**	**3**	**1**	**420**	**765**	**30**	**24**	**19,8**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Semester 2

Obligatory subjects / groups of classes (0 ECTS points)

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1																			
		Total																	

Optional subjects / groups of classes Number of ECTS points 30

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3033G	Sedimentology GK	2			3		K2_GIG_W01,W02 K2_GIG_U01,U13 K2_GIG_K02	75	125	5	3	3,6	T/Z(w)	E		DN	3	S
2	W06GIG-SM3034G	Mineral deposits exploration GK	2			3		K2_GIG_W01, W08,W11,W15, K2_GIG_U01,U13 K2_GIG_K03	75	125	5	3	3,6	T/Z(w)	E		DN	3	S
3	W06GIG-SM3035G	Petroleum geology GK	2			3		K2_GIG_W01,W2,W08, W11, K2_GIG_U01,U4,U10,U13 K2_GIG_K03	75	125	5		3,6	T/Z(w)	E			3	S
4	W06GIG-SM3036G	Engineering geological investigations GK	2			2		K2_GIG_W2,W07, W10, K2_GIG_U01,U04,U10 K2_GIG_K03	60	125	5	3	3,0	T/Z(w)	E		DN	3	S
5	W06GIG-SM3037G	Exploration geochemistry GK	2			1		K2_GIG_W01,W02,W18 K2_GIG_U01,U04,U09,U10,U13 K2_GIG_K02	45	100	4	3	2,3	T/Z(w)	Z		DN	2	S
6	W06GIG-SM3038G	Remote sensing of mineral resources GK	1		1			K2_GIG_W01,W02,W08,W15 K2_GIG_U01,U04,U13,U15 K2_GIG_K03	30	75	3	3	1,5	T/Z(w)	E		DN	2	S
7	W06GIG-SM3039G	GIS in exploration of mineral resources GK	1		1			K2_GIG_W01,W02,W08,W14,W15 K2_GIG_U01,U04,U13,U15 K2_GIG_K01	30	75	3	3	1,5	T/Z(w)	Z		DN	2	S
		Total	**12**		**2**	**12**			**390**	**750**	**30**	**18**	**19,1**					**18**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
12		**2**	**12**		**390**	**750**	**30**	**18**	**19,1**

Semester 3

Obligatory subjects / groups of classes (0 ECTS points)

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1																			
		Total																	

Optional subjects / groups of classes Number of ECTS points 30

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3040G	Regional hydrogeology GK	2			2		K2_GIG_W01,W2,W10, W15 K2_GIG_U01,U4,U13 K2_GIG_K03	60	100	4	4	2,9	T/Z(w)	E		DN	2	S
2	W06GIG-SM3041G	Seismotectonics GK	2			1		K2_GIG_W2,W10, W14 K2_GIG_U01,U4,U10,U13 K2_GIG_K01	45	100	4	4	2,4	T/Z(w)	E		DN	2	S
3	W06GIG-SM3042G	Industrial mineral deposits and applications GK	2				2	K2_GIG_W1,W07, W12 K2_GIG_U01,U10,U13 K2_GIG_K01,K02	60	125	5	5	2,8	T/Z	E		DN	3	S
4	W06GIG-SM3043G	Analytical methods in ore deposits GK	2		2			K2_GIG_W1,W02, W10 K2_GIG_U02,U07,U13 K2_GIG_K01	60	125	5	4	2,8	T/Z(w)	E		DN	3	S
5	W06GIG-SM3044W	Geophysical exploration and mineral resources	2					K2_GIG_W1,W02, W08,W10 K2_GIG_K01	30	75	3	3	1,4	T/Z	E		DN		S
6	W06GIG-SM3045G	Analyses of mineral paragenesis GK	1		2			K2_GIG_W1,W02 K2_GIG_U01,U13 K2_GIG_K01	45	75	3		2,2	T/Z(w)	E			2	S
7	W06GIG-SM3046P	Field and laboratory practicum				8		K2_GIG_U01,U04,U13 K2_GIG_K02,K03	120	150	6	4	5,0	T	Z		DN	6	S
		Total	**11**		**4**	**11**	**2**		**420**	**750**	**30**	**24**	**19,5**					**18**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
11		**4**	**11**	**2**	**420**	**750**	**30**	**24**	**19,5**

Semester 4

Obligatory subjects / groups of classes Number of ECTS points 9

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3012G	Exploration Entrepreneurship GK	1			1	2	K2_GIG_W03,W05,W09 K2_GIG_U08,U09 K2_GIG_K01,K02,K03	60	100	4		3,0	Z	Z			P(3)	S
2	W06GIG-SM3013P	SOC Internship				2		K2_GIG_W05,W09 K2_GIG_U08,U09 K2_GIG_K01,K02,K03	30	50	2		1,5	T	Z			P(2)	S
3	W06GIG-SM3016P	Applied Field Exploration				3		K2_GIG_W08,W15 K2_GIG_U04,U09,U10,U13 K2_GIG_K02	45	75	3	1	2,1	T	Z		DN	P(3)	S
		Total	**1**	**0**	**0**	**6**	**2**		**135**	**225**	**9**	**1**	**6,6**					**8**	

Optional subjects / groups of classes (21 ECTS points)

No.	Subject / groups of classes code	Name of subject / groups of classes (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Subject / groups of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM3014S	Diploma Seminar					1	K2_GIG_W01 K2_GIG_U01,U13 K2_GIG_K02,K03	15	25	1	1	0,8	T	Z		DN	P(1)	S
2	W06GIG-SM3015D	Master Thesis				1		K2_GIG_W01,W05,W10 K2_GIG_U01,U04,U08,U10,U13,U15 K2_GIG_K01,K02,K03	15	500	20	20	1,8	T	Z		DN	P (20)	S
		Total	**0**	**0**	**0**	**1**	**1**		**30**	**525**	**21**	**21**	**2,6**					**21**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
1	**0**	**0**	**7**	**3**	**165**	**750**	**30**	**22**	**9,2**

2. Set of examinations in semestral arrangement

Subjects / groups of classes	Names of subjects / groups of classes ending with examination	Semester
W06GIG-SM3003G	1. Project Management, Appraisal and Risk Evaluation	1
W06GIG-SM3007	2. Principles and Applications of InSAR in Mining	1
W06GIG-SM3033G	1. Sedimentology	2
W06GIG-SM3034G	2. Mineral deposits exploration	2
W06GIG-SM3035G	3. Petroleum geology	2
W06GIG-SM3036G	4. Engineering geological investigations	2
W06GIG-SM3038G	5. Remote sensing of mineral resources	2
W06GIG-SM3040G	1. Regional hydrogeology	3
W06GIG-SM3041G	2. Seismotectonics	3
W06GIG-SM3042G	3. Industrial mineral deposits and applications	3
W06GIG-SM3043G	4. Analytical methods in ore deposits	3
W06GIG-SM3044W	5. Geophysical exploration and mineral resources	3
W06GIG-SM3045G	6. Analyses of mineral paragenesis	
	Final diploma examination	4

3. Numbers of allowable deficit of ECTS points after particular semesters

Semester	Allowable deficit of ECTS points after semester
1	12
2	8
3	0

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of classes – after the letter E or Z - enter in brackets the final subject form (lec, cl, lab, pr, sem)
[4]University-wide subject /group of classes – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Opinion of student government legislative body

POLITECHNIKA WROCŁAWSKA
WYDZIAŁ GEOINŻYNIERII
GÓRNICTWA I GEOLOGII
Samorząd Studencki Wydziału Geoinżynierii,
Górnictwa i Geologii
50-421 Wrocław, Na Grobli 15, pokój 370

28.09.23 ..... Jakub Dobrzański .....

Jakub Dobrzański
Chairman of the Student Government
of the Faculty of Geoengineering, Mining and Geology

Date — Name and surname, signature of student representative

DZIEKAN

28.09.23 ..... prof. dr hab. inż. Radosław Zimroz (1) .....

Date — Dean's signature

WYDZIAŁ: **Geoinżynierii, Górnictwa i Geologii**

KIERUNEK STUDIÓW: **Górnictwo i geologia**

JĘZYK STUDIÓW: angielski

SPECJALNOŚĆ: **Geomatics for Mineral Resource Management**

ŚCIEŻKA KSZTAŁCENIA: **Freiberg**

Zał. nr 3 do ZW 16/2020

Attachment no. 2. to the Program of Studies

DESCRIPTION OF THE PROGRAM OF STUDIES

Main field of study MINING AND GEOLOGY
Profile general academic
Level of studies second level studies
Form of studies full-time studies

1. General description

1.1 Number of semesters: **4**	*1.2 Total number of ECTS points necessary to complete studies at a given level:* **120**
1.3 Total number of hours: **1140**	*1.4 Prerequisites (particularly for second-level studies):* professional title of an engineer, interview
1.5 Upon completion of studies graduate obtains professional degree of: **Magister inżynier** (Master of Science in Engineering)	1.6 Graduate profile, employability: The graduate of the international specialisation Geomatics for Mineral Resource Management will have the skills to use advanced knowledge in the field of basic, and specialized subjects. He/she will have the skills to lead teams, make high-risk decisions, and be fluent in using legal and economic knowledge. The graduate will be prepared to design technological processes, as well as to solve scientific and research problems and to undertake creative initiatives. He/she will be prepared to work in enterprises, technical supervision institutions, public state and local administration, in research and development organisations, in Poland and abroad, where advanced knowledge in the field of mining, geology and geomatics is required. The graduate be able to use English freely and will be prepared to work in an

	international environment and intercultural groups during his/her professional career.
1.7 Possibility of continuing studies: Eligibility to apply for admission to a doctoral school, non-degree postgraduate programmes	*1.8 Indicate connection with University's mission and its development strategy:* The second level study program in the field of study Mining and Geology is in line with the mission and responds to the following strategic goals of Wroclaw University of Science and Technology: 1. Increasing the level of correlation of University activities with the needs of the market, 2. Raising the level of education quality through didactic interdisciplinarity *3.* Raising the level of entrepreneurship and commitment in the research processes of students and doctoral students.

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2. Detailed description

2.1 Total number of learning outcomes in the program of study: W (knowledge) = 19, U (skills) = 15, K (competences) = 3, W + U + K = 37

~~**2.2 For the main field of study assigned to more than one discipline - the number of learning outcomes assigned to the discipline:**~~

~~**D1 (major) ..... (this number must be greater than half the total number of learning outcomes)**~~

~~**D2 .....**~~

~~**D3 .....**~~

~~**D4 .....**~~

~~**2.3 For the main field of study assigned to more than one discipline - percentage share of the number of ECTS points for each discipline:**~~

~~**D1 .....% ECTS points**~~

~~**D2 .....% ECTS points**~~

~~**D3 .....% ECTS points**~~

~~**D4 .....% ECTS points**~~

2.4a. For the general academic profile of the main field of study – the number of ECTS points assigned to the classes related to the University's academic activity in the discipline or disciplines to which the main field of study is assigned – DN (must be greater than 50% of the total number of ECTS points from 1.2) 85 **ECTS**

2.4b. ~~**For the practical profile of the main field of study - the number of ECTS points assigned to the classes shaping practical skills (must be greater than 50% of the total number of ECTS points from 1.2)**~~

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2.5 Concise analysis of compliance of the assumed learning outcomes with the needs of the labor market

The economic development of the country is closely dependent on natural resources, the ability to use them and having appropriate engineering workforce. The assumed learning outcomes correspond to the needs of practice in the field of the generally understood management of mineral resources - technologies and techniques for their identification, valuation, extraction, processing, revitalization of industrial areas, and the practice of managing an enterprise (especially mining) in the sense of managing information, environment and people, using the latest IT and marketing techniques and methods. This integration of economic needs and assumed educational effects favorably shape the labor market for the graduates of the Faculty. Additionally, a good command of English and experience of working in an international group will open up the possibility of working in foreign branches of Polish enterprises and in foreign companies.

2.6. The total number of ECTS points that a student must obtain in classes requiring direct participation of academic teachers or other persons conducting classes and students (enter the sum of ECTS points for courses / groups of courses marked with the BU[1] code) **74,5 ECTS**

2.7. Total number of ECTS points, which student has to obtain from basic sciences classes

Number of ECTS points for obligatory subjects	5
Number of ECTS points for optional subjects	0
Total number of ECTS points	5

2.8. Total number of ECTS points, which student has to obtain from practical classes, including project and laboratory classes (enter total number of ECTS points for courses/group of courses denoted with code P)

Number of ECTS points for obligatory subjects	16
Number of ECTS points for optional subjects	64
Total number of ECTS points	80

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2.9. Minimum number of ECTS points, which student has to obtain doing education blocks offered as part of University-wide classes or other main field of study (enter number of ECTS points for courses/groups of courses denoted with code O)

3 ECTS points

2.10. Total number of ECTS points, which student may obtain doing optional blocks (min. 30% of total number of ECTS points)

93 ECTS points

3. Description of the process leading to learning outcomes acquisition:

1. Upon starting classes in each subject, the student has an appropriate level of knowledge and skills which constitute the prerequisites for a given course (it is verified by the teacher or the dean's office).
2. The student participates in classes organized at the university.
3. The student carries out the assigned work in class and at home (projects, computational tasks, analyzes, prepares presentations) and studies the literature and materials recommended by the teacher.
4. The student uses the appointed hours of the tutor's consultation, explaining his uncertainties and verifying the correct understanding of the course content.
5. The student participates in periodic tests of knowledge and skills, completes the tests available on the e-portal and is familair with the correct answers, grades and comments from the teacher.
6. In some subjects, the student participates in group tasks, taking part in the organization of the group's work, assessment of the activities of individual participants and takes responsibility for the result of the group's work.
7. The student is encouraged to become involved in the work of research clubs, student organizations, discussion clubs, sports groups, participation in social life through work in public welfare organizations, voluntary work, thus gaining valuable interpersonal skills and social competences.
8. The student participates in meetings with companies from the industry, technical excursions, job fairs, tries to gain knowledge about the labor market and additional advantages when applying for a job
9. The student is encouraged to participate in an international student exchange, and through contact with foreigners at the faculty, he or she acquires additional interpersonal, cultural and language qualifications

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4. List of education blocks:

4.1. List of obligatory blocks:

4.1.1 List of general education blocks

4.1.1.1 *Liberal-managerial subjects* block *(6 ECTS points):*

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM0039G	Project Management, Appraisal and Risk Evaluation (GK)	1		2	1		K2_GIG_W08,W10, W11 K2_GIG_U04,U08,U10,U15 K2_GIG_K01	60	120	4	4	3	T/Z(w)	E(w), Z(l,p)		DN	P (3)	KO
2	W06GIG-SM0053	Human Resources Management & Organizational Behaviour	2					K2_GIG_W05,W09 K2_GIG_U08,U09 K2_GIG_K02, K03	30	90	3		2	T	E				KO
		Total	**3**	**0**	**2**	**1**	**0**		**90**	**210**	**7**	**4**	**5**					**3**	

Altogether for general education blocks

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
3	**0**	**2**	**1**	**0**	**90**	**210**	**7**	**4**	**5**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.1.2 List of basic sciences blocks

4.1.2.1 *Mathematics* block

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM0038	Computer Aided Geological Modelling & Geostatistics (część: Geostatistics)	1		1			K2_GIG_W06,W08,W15 K2_GIG_U04,U08,U14	30	60	2		2	T	Z(w,l)			P (1)	PD
		Total	**1**	**0**	**1**	**0**	**0**		**30**	**60**	**2**		**2**					**1**	

4.1.2.2 *Physics* block

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM0040	Engineering Geophysics	1			1		K2_GIG_W02,W08,W10 K2_GIG_U04,U13	30	90	3	3	2	T /Z(w)	Z		DN	P(2)	PD
		Total	**1**	**0**	**0**	**1**	**0**		**30**	**90**	**3**	**3**	**2**					**2**	

Altogether for basic sciences blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
2	**0**	**1**	**1**	**0**	**60**	**150**	**5**	**3**	**4**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.1.3 List of the main field of study blocks

4.1.3.1 *Obligatory main field of study* blocks

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM0038	Computer Aided Geological Modelling & Geostatistics (Część: Computer Aided Geological Modelling)			2			K2_GIG_W06,W08,W15 K2_GIG_U04,U08,U14	30	90	3	3	2	T	Z		DN	P(3)	K
2	W06GIG-SM0037	Principles and Application of InSAR and GIS in mining	2		3			K2_GIG_W15,W16,W18 K2_GIG_U04,U07,U08	75	150	5	5	4	T /Z(w)	E(w) Z(l)			P(3)	K
3	W06GIG-SM0041G	Integrated Analysis of Deformations in Geomechanical Engineering (GK)	2		2			K2_GIG_W07,W13,W14 K2_GIG_U07,U08,U10	60	150	5	5	4	T /Z(w)	E, Z		DN	P(3)	K
4	W06GIG-SM0042	Occupational Health and Safety	1			1		K2_GIG_W11,W12,W14, W17, K2_GIG_U11, K2_GIG_K02, K03	30	60	2	2	2	T /Z(w)	Z		DN	P(1)	K
		Total	**5**	**0**	**7**	**1**	**0**		**195**	**450**	**15**	**15**	**12**					**10**	

Altogether (for main field of study blocks):

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
5	**0**	**7**	**1**	**0**	**195**	**450**	**15**	**15**	**12**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.2 List of optional blocks

4.2.1 List of general education blocks

4.2.1.2 *Foreign languages* block *(min. 3 ECTS points):*

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	SJO-SM0003	Foreign Language I		3				K2_GIG_ U03	45	60	2		1	T	Z	O		P (2)	KO
2	SJO-SM0004	Foreign Language II		1				K2_GIG_U01,U02	15	30	1		0,5	T	Z	O		P(1)	KO
		Total	**0**	**4**	**0**	**0**	**0**		**60**	**90**	**3**		**1,5**					**3**	

Altogether for general education blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
0	**4**	**0**	**0**	**0**	**60**	**90**	**3**	**0**	**1,5**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.2.4 List of specialization blocks

4.2.4.1 *Specialization subjects (e.g. whole specialization)* blocks *(61 ECTS points):*

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol GK)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM0044G	Applied Remote Sensing in Geosciences (GK)	1		3			K2_GIG_W07,W12,W18 K2_GIG_U04,U07,U08,U10 K2_GIG_K03	60	180	6	4	4	T	E		DN	P(4)	S
2	W06GIG-SM0045G	Underground Mine Surveying (GK)	2		3			K2_GIG_W07,W14 K2_GIG_U04,U07,U10 K2_GIG_K03	75	150	5	5	5	T	E		DN	P(4)	S
3	W06GIG-SM0046G	Geomonitoring (GK)	2		2			K2_GIG_W10,W16 K2_GIG_U04,U07,U10,U12 K2_GIG_K03	60	150	5	5	4	T	E		DN	P(3)	S
4	W06GIG-SM0047G	Operations Management (GK)	2		2			K2_GIG_W05,W06,W09,W13, W14 K2_GIG_U07,U08,U10,U14, U15, K2_GIG_K01	60	180	6		4	T	E			P(4)	S
5	W06GIG-SM0048G	Geomodelling – Geostatistics for Natural Resource Modelling (GK)	2		2			K2_GIG_W06,W08,W18 K2_GIG_U04,U10	60	150	5	5	4	T	E		DN	P(3)	S
6	W06GIG-SM0049G	Special Topics Geokinematics (GK)	2		2			K2_GIG_W07,W10,W16 K2_GIG_U04,U07,U08 K2_GIG_K03	60	120	4	2	4	T	E		DN	P(2)	S
7	W06GIG-SM0050	Applied Spatial Data Analysis and Modelling - Case Study (GIS 2)	3					K2_GIG_W08,W18 K2_GIG_U04,U10	45	150	5		3	T	E		DN	P(3)	S
8	W06GIG-SM0051G	Geomatics for Mineral Resource and Reserve Management (GK)	2			2		K2_GIG_W07,W10,W11,W12, W13 K2_GIG_U04,U05,U10,U12	60	180	6	6	4	T	E		DN	P(4)	S
9	W06GIG-SM0052G	Reclamation (GK)	3		2	1		K2_GIG_W04,W07,W10,W11, W12,W19 K2_GIG_U04,U05,U07,U10, U12	90	180	6	6	6	T	E		DN	P(4)	S
10	W06GIG-SM0091G	Rock Mechanics GK	2		2			K2_GIG_W10,W14,W18 K2_GIG_U04,U07,U10	60	150	5	3	3	T	E		DN	P(3)	S
11	W06GIG-SM0092G	Applied Geodesy GK	2		2			K2_GIG_W10 K2_GIG_U04,U07,U15	60	120	4	2	2	T	E		DN	P(2)	S

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

12	W06GIG-SM0093G	Selected Aspects of Engineering Surveying in Mining and Tunnelling GK	2		3			K2_GIG_W07,W09 K2_GIG_U04,U07,U15	75	180	6	6	4	T	E		DN	P(4)	S
10	GIG-SM1111AN	Free elctive	2					K2_GIG_W07 K2_GIG_K03	30	90	3		2	T	Z				S
11	GIG-SM1111AN	Free elctive	2					K2_GIG_W07 K2_GIG_K03	30	90	3		2	T	Z				S
12	GIG-SM1111AN	Free elctive	2					K2_GIG_W07 K2_GIG_K03	30	90	3		2	T	Z				S
13	GIG-SM1111AN	Free elctive	2					K2_GIG_W07 K2_GIG_K03	30	90	3		2	T	Z				S
		Total	**27**	**0**	**16**	**3**	**0**		**690**	**1800**	**60**	**33**	**46**					**31**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.2.4.2 *Diploma (e.g. diploma profile)* block *(30 ECTS points):*

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM0070S	Diploma Seminar					2	K2_GIG_W01 K2_GIG_U01,U13 K2_GIG_K03	30	60	2	2	1	T	Z		DN	P(2)	S
2	W06GIG-SM0054D	Master Thesis		1				K2_GIG_W01,W05,W10 K2_GIG_U01,U04, U08,U10,U13,U15 K2_GIG_K01,K03	15	840	28	28	5	T	Z		DN	P(28)	S
		Total	**0**	**1**	**0**	**0**	**2**		**45**	**900**	**30**	**30**	**6**					**30**	

Altogether for specialization blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
27	**1**	**16**	**3**	**2**	**735**	**2700**	**90**	**63**	**52**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.3 Training block - concerning principles of training crediting – attachment no. …

Opinion of the Advisory Faculty Council concerning the rules of crediting training block

Name of training			
Number of ECTS points	**Number of ECTS points for BU[1] classes**	**Training crediting mode**	**Code**

Training duration	Training objective

4.4 „Diploma dissertation" block (*if it is foreseen at first level studies)*

Type of diploma dissertation	Licencjat / inżynier / magister / magister inżynier*	
Number of diploma dissertation semesters	**Number of ECTS points**	**Code**
1	**28**	**W06GIG-SM0054D**
Character of diploma dissertation		
Literature survey, project, computer program, etc.		
Number of BU[1] ECTS points	**5**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

5. Ways of verifying assumed learning outcomes

Type of classes	Ways of verifying assumed learning outcomes
lecture	e.g. examination, progress/final test
class	e.g. progress/final test
laboratory	e.g. pretest, report from laboratory
project	e.g. project defence
seminar	e.g. participation in discussion, topic presentation, essay
training	e.g. report from training
diploma dissertation	prepared diploma dissertation

6. Range of diploma examination

1. Stochastic interpretation of numerical values of a given feature, measured at points with known spatial location.
2. Covariance, correlation and semivariance as measures of continuity of a regionalized variable.
3. Variogram and methods of its modelling.
4. Assessment of the linear error of the estimator of the local value of a given feature.
5. Factors influencing the error value.
6. Kriging, its properties and types.
7. Securing people during an underground fire, escape routes.
8. Occupational risk - assessment methods, estimating occupational risk.
9. Geophysical methods of exploration and identification of deposits.
10. Computer aided exploration and identification of deposits.
11. Basic principles of corporate finance management.
12. Methods of assessing the profitability of investments and their applications.
13. Decision models used in management.
14. Types of environmental management systems.
15. Types and systematics of operations, information model of operations, concepts of system and operation process, efficiency, reliability, effective working time.

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

16. Methods of reclamation of post-mining land.
17. Assessment of the accuracy of geodetic measurements.
18. The measurement network used for surveys in mines.
19. Absolute and relative deformation monitoring methods.
20. Geodetic networks for determining deformations and displacements of engineering structures.
21. Geodetic surveys in recognition and development of mineral deposits.
22. Methods of interpolation of measurement data.
23. Spatial data models in GIS.
24. Basic types of spatial analyses in GIS.
25. Types of mining damages and their geodetic monitoring.
26. The principle of assessing the accuracy of displacements.
27. Applications of remote sensing in environmental protection and management of the Earth's natural resources.
28. Advantages and disadvantages of using satellite radar interferometry in monitoring the activity of the land surface.
29. Differences between PsInSAR and SBAS methods.
30. Examples and description of selected remote sensing programs.
31. Methods of geodetic use of SAR images.
32. Applications of active remote sensing systems.
33. Advantages and disadvantages of multispectral and hyperspectral imaging.
34. model of errors of numerical terrain models.

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

7. Requirements concerning deadlines for crediting courses/groups of courses for all courses in particular blocks

No.	*Course / group of courses code*	*Name of course / group of courses*	*Crediting by deadline of... (number of semester)*
1	*W06GIG-SM0037*	*Principles and Application of InSAR and GIS in mining*	*1-4*
2	*W06GIG-SM0038*	*Computer Aided Geological Modelling & Geostatistics*	*1-4*
3	*W06GIG-SM0039G*	*Project Management, Appraisal and Risk Evaluation*	*1-4*
4	*W06GIG-SM0040*	*Engineering Geophysics*	*1-4*
5	*W06GIG-SM0041G*	*Integrated Analysis of Deformations in Geomechanical Engineering*	*1-4*
6	*W06GIG-SM0042*	*Occupational Health and Safety*	*1-4*
7	*SJO-SM0003*	*Foreign language*	*1-4*
8	*SJO-SM0004*	*Foreign language*	*1-4*
9	*GIG-SM1111AN*	*Free elective*	*1-4*
10	*W06GIG-SM0044G*	*Applied Remote Sensing in Geosciences*	*2-4*
11	*W06GIG-SM0045G*	*Underground Mine Surveying*	*2-4*
12	*W06GIG-SM0046G*	*Geomonitoring*	*2-4*
13	*W06GIG-SM0047G*	*Operations Management*	*2-4*
14	*W06GIG-SM0048G*	*Geomodelling – Geostatistics for Natural Resource Modelling*	*2-4*
15	*GIG-SM1111AN*	*Free elective*	*2-4*
16	*W06GIG-SM0049G*	*Special Topics Geokinematics*	*3-4*
17	*W06GIG-SM0050G*	*Applied Spatial Data Analysis and Modelling - Case Study (GIS 2)*	*3-4*
18	*W06GIG-SM0051G*	*Geomatics for Mineral Resource and Reserve Management*	*3-4*
19	*W06GIG-SM0052G*	*Reclamation*	*3-4*
20	*W06GIG-SM0053*	*Human Resources Management & Organizational Behaviour*	*3-4*
21	*GIG-SM1111AN*	*Free electives*	*3*
22	*W06GIG-SM0054D*	*Master Thesis*	*4*
23	*W06GIG-SM0070S*	*Diploma Seminar*	*4*

8. Plan of studies (attachment no. 4)

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Approved by faculty student government legislative body:

Patrycja Haraj
President of the Student Government
of the Faculty of Geoengineerin, Mining and Geology

.....
Date 21.10.2022

.....
name and surname, signature of student representative

DZIEKAN
prof. dr hab. inż. Radosław Zimroz

.....
Date 21.10.2022

.....
Dean's signature

Zał. nr 4 do ZW 16/2020
Attachment no. 4 to Program of Studies

PLAN OF STUDIES

FACULTY: Geoengineering, Mining and Geology

MAIN FIELD OF STUDY: Mining and geology

EDUCATION LEVEL: second-level studies

FORM OF STUDIES: full-time studies

PROFILE: general academic

SPECIALIZATION: Geomatics for Mineral Resources Management Pathway Freiberg (Geomatyka w zarządzaniu surowcami mineralnymi)

LANGUAGE OF STUDY: English

In effect since academic year 2022/23

Plan of studies structure (optionally)

1. Set of obligatory and optional courses and groups of courses in semestral arrangement

sem./ hours	1	ECTS	2	ECTS	3	ECTS	4	ECTS
1 2 3 4 5	Principles and Application of InSAR and GIS in mining 20300E W06GIG-SM0037	5	Applied Remote Sensing in Geosciences 10300E W06GIG-SM0044G	6	Special Topics Geokinematics 20200E W06GIG-SM0049G	4	Master Thesis 01000Z W06GIG-SM0054D	28
6 7 8 9	Computer Aided Geological Modelling & Geostatistics 10300Z W06GIG-SM0038	5	Underground Mine Surveying 20300E W06GIG-SM0045G	5	Applied Spatial Data Analysis and Modelling - Case Study (GIS 2) 30000E W06GIG-SM0050	5		
10 11 12 13	Project Management, Appraisal and Risk Evaluation 10210E W06GIG-SM0039G	4	Geomonitoring 20200E W06GIG-SM0046G	5	Geomatics for Mineral Resource and Reserve Management 20020E W06GIG-SM0051G	6		
14 15	Engineering Geophysics 10010Z W06GIG-SM0040	3	Operations Management 20200E W06GIG-SM0047G	6	Reclamation 30210E W06GIG-SM0052G	6		
16 17 18 19	Integrated Analysis of Deformations in Geomechanical Engineering 20200E W06GIG-SM0041G	5	Geomodelling – Geostatistics for Natural Resource Modelling 20200E W06GIG-SM0048G	5	Human Resources Management & Organizational Behaviour 20000E W06GIG-SM0053	3	Diploma Seminar 00002Z W06GIG-SM0070S	2
20 21	Occupational Health and Safety 100100Z W06GIG-SM0042	2			Free elective 20000Z GIG-SM1111AN	3		
22 23 24	Foreign Language I 03000 Z SJO-SM0003	2	Free Elective 20000 Z GIG-SM1111AN	3	Free elective 20000Z GIG-SM111AN	3		
25 26	Free Elective 20000 Z GIG-SM1111AN	3						
27	Foreign Language II 01000 Z SJO-SM0004	1						
sum		**30**		**30**		**30**		**30**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Semester 1

Obligatory courses / groups of courses Number of ECTS points 24

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG -SM0037	Principles and Application of InSAR and GIS in mining	2		3			K2_GIG_W15,W16,W18 K2_GIG_U04,U07,U08	75	150	5	5	4	T/Z(w)	E(w) Z(l)		DN	P(3)	K
2	W06GIG-SM0038	Computer Aided Geological Modelling & Geostatistics	1		3			K2_GIG_W06,W08,W15 K2_GIG_U04,U08,U14	60	150	5	3	4	T /Z(w)	Z(w,l)		DN	P (4)	PD
3	W06GIG-SM0039G	Project Management, Appraisal and Risk Evaluation (GK)	1		2	1		K2_GIG_W10,W14 K2_GIG_U04,U08,U10,U15 K2_GIG_K01	60	120	4	4	3	T/Z(w)	E(w), Z(l,p)		DN	P (3)	KO
4	W06GIG-SM0040	Engineering Geophysics	1			1		K2_GIG_W02,W08,W10 K2_GIG_U04,U13	30	90	3	3	2	T /Z(w)	Z		DN	P(2)	PD
5	W06GIG-SM0041G	Integrated Analysis of Deformations in Geomechanical Engineering (GK)	2		2			K2_GIG_W07,W13,W14 K2_GIG_U07,U08,U10	60	150	5	5	4	T /Z(w)	E, Z		DN	P(3)	K
6	W06GIG-SM0042	Occupational Health and Safety	1			1		K2_GIG_W11,W12,W14, W17 K2_GIG_U11, K2_GIG_K02, K03	30	60	2	2	2	T /Z(w)	Z		DN	P(1)	K
		Total	**8**	**0**	**10**	**3**	**0**		**315**	**720**	**24**	**22**	**19**					**16**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Optional courses / groups of courses (6 ECTS points)

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	SJO-SM0003	Foreign Language I		3				K2_GIG_ U03	45	60	2		1	T	Z	O		P (2)	KO
2	SJO-SM0004	Foreign Language II		1				K2_GIG_U01,U02	15	30	1		0,5	T	Z	O		P(1)	KO
3	GIG-SM1111AN	Free elctive	2					K2_GIG_W07 K2_GIG_K03	30	90	3		2	T	Z				S
		Total	**2**	**4**	**0**	**0**	**0**		**90**	**180**	**6**		**3,5**					**3**	

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
10	**4**	**10**	**3**	**0**	**405**	**900**	**30**	**22**	**22,5**

Semester 2

Obligatory courses / groups of courses Number of ECTS points 0

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
		Total																	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Optional courses / groups of courses (30 ECTS points)

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical [6]	Type[7]
1	W06GIG-SM0044G	Applied Remote Sensing in Geosciences (GK)	1		3			K2_GIG_W07,W12,W18 K2_GIG_U04,U07,U08, U10 K2_GIG_K03	60	180	6	4	4	T	E		DN	P(4)	S
2	W06GIG-SM0045G	Underground Mine Surveying (GK)	2		3			K2_GIG_W07,W14 K2_GIG_U04,U07,U10 K2_GIG_K03	75	150	5	5	5	T	E		DN	P(4)	S
3	W06GIG-SM0046G	Geomonitoring (GK)	2		2			K2_GIG_W10,W16 K2_GIG_U04,U07, U10,U12 K2_GIG_K03	60	150	5	5	4	T	E		DN	P(3)	S
4	W06GIG-SM0047G	Operations Management (GK)	2		2			K2_GIG_W05,W06,W09,W13,W14 K2_GIG_U07,U08, U10,U14,U15 K2_GIG_K01	60	180	6		4	T	E			P(4)	S
5	W06GIG-SM0048G	Geomodelling – Geostatistics for Natural Resource Modelling (GK)	2		2			K2_GIG_W06,W08,W18 K2_GIG_U04,U10	60	150	5	5	4	T	E		DN	P(3)	S
6	GIG-SM1111AN	Free elctive	2					K2_GIG_W07 K2_GIG_K03	30	90	3		2	T	Z				S
		Total	**11**	**0**	**12**	**0**	**0**		**345**	**900**	**30**	**19**	**23**					**18**	

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
11	**0**	**12**	**0**	**0**	**345**	**900**	**30**	**19**	**23**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Semester 3

Obligatory courses / groups of courses Number of ECTS points 3

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG -SM0053	Human Resources Management & Organizational Behaviour	2					K2_GIG_W05,W09 K2_GIG_U08,U09 K2_GIG_K02, K03	30	90	3		2	T	E				KO
		Total	**2**	**0**	**0**	**0**	**0**		**30**	**90**	**3**	**0**	**2**						

Optional courses / groups of courses (27 ECTS points)

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM0049G	Special Topics Geokinematics (GK)	2		2			K2_GIG_W07,W10,W16 K2_GIG_U04,U07, U08 K2_GIG_K03	60	120	4	2	4	T	E		2	P(2)	S
2	W06GIG-SM0050	Applied Spatial Data Analysis and Modelling - Case Study (GIS 2)	3					K2_GIG_W08,W18 K2_GIG_U04,U10	45	150	5		3	T	E		-	P(3)	S
3	W06GIG-SM0041G	Geomatics for Mineral Resource and Reserve Management (GK)	2			2		K2_GIG_W07,W10, W11,W12,W13 K2_GIG_U04,U05, U10,U12	60	180	6	6	4	T	E		6	P(4)	S
4	W06GIG-SM0052G	Reclamation (GK)	3		2	1		K2_GIG_W04,W07, W10,W11,W12,W19 K2_GIG_U04,U05,U07,U10,U12	90	180	6	6	6	T	E		6	P(4)	S
5	GIG-SM3111AN	Free elctive	2					K2_GIG_W07 K2_GIG_K03	30	90	3		2	T	Z				S
6	GIG-SM3111AN	Free elctive	2					K2_GIG_W07 K2_GIG_K03	30	90	3		2	T	Z				S
		Total	**14**	**0**	**4**	**3**	**0**		**315**	**810**	**27**	**14**	**21**					**13**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
16	**0**	**4**	**3**	**0**	**345**	**900**	**30**	**14**	**23**

Semester 4

Optional courses / groups of courses (30 ECTS points)

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM0070S	Diploma Seminar					2	K2_GIG_W01 K2_GIG_U01,U13 K2_GIG_K03	30	60	2	2	1	T	Z		DN	P(2)	S
2	W06GIG-SM0054D	Master Thesis		1				K2_GIG_W01,W05,W10 K2_GIG_U01,U04, U08,U10,U13,U15 K2_GIG_K01,K03	15	840	28	28	5	T	Z		DN	P(28)	S
		Total	**0**	**1**	**0**	**0**	**2**		**45**	**900**	**30**	**30**	**6**					**30**	

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
0	**1**	**0**	**0**	**2**	**45**	**900**	**30**	**30**	**6**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2. Set of examinations in semestral arrangement

Course / group of courses code	Names of courses / groups of courses ending with examination	Semester
W06GIG-SM0037	1. Principles and Application of InSAR and GIS in mining	1
W06GIG-SM0039G	2. Project Management, Appraisal and Risk Evaluation	1
W06GIG-SM0041G	3. Integrated Analysis of Deformations in Geomechanical Engineering	1
W06GIG-SM0044G	1. Applied Remote Sensing in Geosciences	2
W06GIG-SM0045G	2. Underground Mine Surveying	2
W06GIG-SM0046G	3. Geomonitoring	2
W06GIG-SM0047G	4. Operations Management	2
W06GIG-SM0048G	5. Geomodelling – Geostatistics for Natural Resource Modelling	2
W06GIG-SM0049G	1. Special Topics Geokinematic	3
W06GIG-SM0050	2. Applied Spatial Data Analysis and Modelling - Case Study	3
W06GIG-SM0051G	3. Geomatics for Mineral Resource and Reserve Management	3
W06GIG-SM0052G	4. Reclamation	3
W06GIG-SM0053	5. Human Resources Management & Organizational Behaviour	3

3. Numbers of allowable deficit of ECTS points after particular semesters

Semester	Allowable deficit of ECTS points after semester
1	12
2	12
3	8
4	0

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Opinion of student government legislative body

Patrycja Haraj

Patrycja Haraj
President of the Student Government
of the Faculty of Geoengineerin, Mining and Geology

.....
Date 21.10.2022

.....
name and surname, signature of student representative

DZIEKAN
prof. dr hab. inż. Radosław Zimroz

.....
Date 21.10.2022

.....
Dean's signature

FACULTY: **of Geoengineering, Mining and Geoology**

MAIN FIELD OF STUDY: **Mining and Geology**

LANGUAGE OF STUDY: English

SPECIALIZATION: **Geomatics for Mineral Resource Management**

STUDY TRACK: **Leoben**

Zał. nr 3 do ZW 16/2020

Attachment no. 2. to the Program of Studies

DESCRIPTION OF THE PROGRAM OF STUDIES

Main field of study MINING AND GEOLOGY
Level of studies second level studies
Profile general academic
Form of studies full-time studies

1. General description

1.1 Number of semesters: **4**	*1.2 Total number of ECTS points necessary to complete studies at a given level:* **120**
1.3 Total number of hours: **1185**	*1.4 Prerequisites (particularly for second-level studies):* professional title of an engineer, interview
1.5 Upon completion of studies graduate obtains professional degree of: **Magister inżynier** (Master of Science in Engineering)	*1.6 Graduate profile, employability:* The graduate of the international specialisation Geomatics for Mineral Resource Management will have the skills to use advanced knowledge in the field of basic, and specialized subjects. He/she will have the skills to lead teams, make high-risk decisions, and be fluent in using legal and economic knowledge. The graduate will be prepared to design technological processes, as well as to solve scientific and research problems and to undertake creative initiatives. He/she will be prepared to work in enterprises, technical supervision institutions, public state and local administration, in research and development organisations, in Poland and abroad, where advanced knowledge in the field of mining, geology and geomatics is required. The graduate be able to use English freely and will be prepared to work in an

	international environment and intercultural groups during his/her professional career.
1.7 Possibility of continuing studies: Eligibility to apply for admission to a doctoral school, non-degree postgraduate programmes	*1.8 Indicate connection with University's mission and its development strategy:* The second level study program in the field of study Mining and Geology is in line with the mission and responds to the following strategic goals of Wroclaw University of Science and Technology: 1. Increasing the level of correlation of University activities with the needs of the market, 2. Raising the level of education quality through didactic interdisciplinarity *3.* Raising the level of entrepreneurship and commitment in the research processes of students and doctoral students

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2. Detailed description

2.1 Total number of learning outcomes in the program of study: W (knowledge) = 19, U (skills) = 15, K (competences) = 3, W + U + K = 37

~~**2.2 For the main field of study assigned to more than one discipline - the number of learning outcomes assigned to the discipline:**~~

~~**D1 (major) ..... (this number must be greater than half the total number of learning outcomes)**~~
~~**D2 .....**~~
~~**D3 .....**~~
~~**D4 .....**~~

~~**2.3 For the main field of study assigned to more than one discipline - percentage share of the number of ECTS points for each discipline:**~~

~~**D1 .....% ECTS points**~~
~~**D2 .....% ECTS points**~~
~~**D3 .....% ECTS points**~~
~~**D4 .....% ECTS points**~~

2.4a. For the general academic profile of the main field of study – the number of ECTS points assigned to the classes related to the University's academic activity in the discipline or disciplines to which the main field of study is assigned – DN (must be greater than 50% of the total number of ECTS points from 1.2) 95 ECTS

2.4b. ~~For the practical profile of the main field of study - the number of ECTS points assigned to the classes shaping practical skills (must be greater than 50% of the total number of ECTS points from 1.2)~~

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2.5 Concise analysis of compliance of the assumed learning outcomes with the needs of the labor market

The economic development of the country is closely dependent on natural resources, the ability to use them and having appropriate engineering workforce. The assumed learning outcomes correspond to the needs of practice in the field of the generally understood management of mineral resources - technologies and techniques for their identification, valuation, extraction, processing, revitalization of industrial areas, and the practice of managing an enterprise (especially mining) in the sense of managing information, environment and people, using the latest IT and marketing techniques and methods. This integration of economic needs and assumed educational effects favorably shape the labor market for the graduates of the Faculty. Additionally, a good command of English and experience of working in an international group will open up the possibility of working in foreign branches of Polish enterprises and in foreign companies.

2.6. The total number of ECTS points that a student must obtain in classes requiring direct participation of academic teachers or other persons conducting classes and students (enter the sum of ECTS points for courses / groups of courses marked with the BU[1] code) **71,5 ECTS**

2.7. Total number of ECTS points, which student has to obtain from basic sciences classes

Number of ECTS points for obligatory subjects	5
Number of ECTS points for optional subjects	0
Total number of ECTS points	5

2.8. Total number of ECTS points, which student has to obtain from practical classes, including project and laboratory classes (enter total number of ECTS points for courses/group of courses denoted with code P)

Number of ECTS points for obligatory subjects	16
Number of ECTS points for optional subjects	68
Total number of ECTS points	84

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2.9. Minimum number of ECTS points, which student has to obtain doing education blocks offered as part of University-wide classes or other main field of study (enter number of ECTS points for courses/groups of courses denoted with code O)

3 ECTS points

2.10. Total number of ECTS points, which student may obtain doing optional blocks (min. 30% of total number of ECTS points)

94 ECTS points

3. Description of the process leading to learning outcomes acquisition:

1. Upon starting classes in each subject, the student has an appropriate level of knowledge and skills which constitute the prerequisites for a given course (it is verified by the teacher or the dean's office).
2. The student participates in classes organized at the university.
3. The student carries out the assigned work in class and at home (projects, computational tasks, analyzes, prepares presentations) and studies the literature and materials recommended by the teacher.
4. The student uses the appointed hours of the tutor's consultation, explaining his uncertainties and verifying the correct understanding of the course content.
5. The student participates in periodic tests of knowledge and skills, completes the tests available on the e-portal and is familair with the correct answers, grades and comments from the teacher.
6. In some subjects, the student participates in group tasks, taking part in the organization of the group's work, assessment of the activities of individual participants and takes responsibility for the result of the group's work.
7. The student is encouraged to become involved in the work of research clubs, student organizations, discussion clubs, sports groups, participation in social life through work in public welfare organizations, voluntary work, thus gaining valuable interpersonal skills and social competences.
8. The student participates in meetings with companies from the industry, technical excursions, job fairs, tries to gain knowledge about the labor market and additional advantages when applying for a job
9. The student is encouraged to participate in an international student exchange, and through contact with foreigners at the faculty, he or she acquires additional interpersonal, cultural and language qualifications

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4. List of education blocks:

4.1. List of obligatory blocks:

4.1.1 List of general education blocks

4.1.1.1 *Liberal-managerial subjects* block *(6 ECTS points):*

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM0039G	Project Management, Appraisal and Risk Evaluation (GK)	1		2	1		K2_GIG_W08,W10, W11 K2_GIG_U04,U08,U 10,U15 K2_GIG_K01	60	120	4	4	3	T/Z(w)	E(w), Z(l,p)		DN	P (3)	KO
3	W06GIG-SM0080	Spatial planning	1					K2_GIG_W10,W14 K2_GIG_U11,U13 K2_GIG_K02, K03	15	60	2		1	T	Z				KO
		Total	**2**	**0**	**2**	**1**	**0**		**75**	**180**	**6**	**4**	**4**					**3**	

Altogether for general education blocks

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
2	**0**	**2**	**1**	**0**	**75**	**180**	**6**	**4**	**4**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.1.2 List of basic sciences blocks

4.1.2.1 *Mathematics* block

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM0038	Computer Aided Geological Modelling & Geostatistics (part: Geostatistics)	1		1			K2_GIG_W06,W08,W15 K2_GIG_U04,U08,U14	30	60	2		2	T	Z(w,l)			P (1)	PD
		Total	**1**	**0**	**1**	**0**	**0**		**30**	**60**	**2**		**2**					**1**	

4.1.2.2 *Physics* block

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM0040	Engineering Geophysics	1			1		K2_GIG_W02,W08,W10 K2_GIG_U04,U13	30	90	3	3	2	T /Z(w)	Z		DN	P(2)	PD
		Total	**1**	**0**	**0**	**1**	**0**		**30**	**90**	**3**	**3**	**2**					**2**	

Altogether for basic sciences blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
2	**0**	**1**	**1**	**0**	**60**	**150**	**5**	**3**	**4**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.1.3 List of the main field of study blocks

4.1.3.1 *Obligatory main field of study* blocks

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM0038	Computer Aided Geological Modelling & Geostatistics (Część: Computer Aided Geological Modelling)			2			K2_GIG_W06,W08,W15 K2_GIG_U04,U08,U14	30	90	3	3	2	T	Z		DN	P(3)	K
2	W06GIG-SM0037	Principles and Application of InSAR and GIS in mining	2		3			K2_GIG_W15,W16,W18 K2_GIG_U04,U07,U08	75	150	5	5	4	T /Z(w)	E(w) Z(l)			P(3)	K
3	W06GIG-SM0041G	Integrated Analysis of Deformations in Geomechanical Engineering (GK)	2		2			K2_GIG_W07,W13,W14 K2_GIG_U07,U08,U10	60	150	5	5	4	T /Z(w)	E, Z		DN	P(3)	K
4	W06GIG-SM0042	Occupational Health and Safety	1			1		K2_GIG_W11,W12,W14, W17, K2_GIG_U11, K2_GIG_K02, K03	30	60	2	2	2	T /Z(w)	Z		DN	P(1)	K
		Total	**5**	**0**	**7**	**1**	**0**		**195**	**450**	**15**	**15**	**12**					**10**	

Altogether (for main field of study blocks):

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
5	**0**	**7**	**1**	**0**	**195**	**450**	**15**	**15**	**12**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.2 List of optional blocks

4.2.1 List of general education blocks

4.2.1.2 *Foreign languages* block *(min. 3 ECTS points):*

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	SJO-SM0003	Foreign Language I		3				K2_GIG_ U03	45	60	2		1	T	Z	O		P (2)	KO
2	SJO-SM0004	Foreign Language II		1				K2_GIG_U01,U02	15	30	1		0,5	T	Z	O		P(1)	KO
		Total	**0**	**4**	**0**	**0**	**0**		**60**	**90**	**3**		**1,5**					**3**	

Altogether for general education blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
0	**4**	**0**	**0**	**0**	**60**	**90**	**3**	**0**	**1,5**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.2.4 List of specialization blocks

4.2.4.1 *Specialization subjects (e.g. whole specialization)* blocks *(61 ECTS points):*

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol GK)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM0081G	Risk Management in Mines GK	1		1			K2_GIG_W05,W09,W11,W14, W17 K2_GIG_U11,U12	30	90	3	3	1	T	E		DN	P(1)	S
2	W06GIG-SM0082G	Deposit Modelling and Associated Software GK	1		1			K2_GIG_W06,W15 K2_GIG_U04 K2_GIG_K03	30	60	2	2	1	T	Z		DN	P(1)	S
3	W06GIG-SM0083G	Underground Mining GK	2	1				K2_GIG_W07,W09,W19 K2_GIG_U04,U07,U09	45	120	4	4	2	T	E		DN	P(4)	S
4	W06GIG-SM0084G	Mining Subsidence Engineering GK	1		2			K2_GIG_W07,W10,W16 K2_GIG_U07 K2_GIG_K03	45	90	3	5	4	T	E		DN	P(3)	S
5	W06GIG-SM0085G	Geotechnical Monitoring and Instrumentation GK	1		1			K2_GIG_W07,W10,W18 K2_GIG_U07	30	45	1,5	1	1	T	Z		DN	P(1)	S
6	W06GIG-SM0087P	Mine Surveying Project Study				3		K2_GIG_U07,U10,U15	45	90	3	3	3	T	Z		DN	P(3)	S
7	W06GIG-SM0088W	Regulation of Mining Damages and Ensuring Land Use	1					K2_GIG_W05,W11,W13 K2_GIG_U05 K2_GIG_K02,K03	15	45	1,5	1	1	T	Z		DN	P(1)	S
8	W06GIG-SM0089G	Automatic Surface Inspection GK	1		1			K2_GIG_W14,W16 K2_GIG_U07,U08	30	90	3	2	1	T	Z		DN	P(2)	S
9	W06GIG-SM0090G	Environmental Aspects of Mineral Extraction GK	2	1				K2_GIG_W04,W11,W12,W13 K2_GIG_U05,U10,U12,U15 K2_GIG_K02,K03	45	90	3	2	4	T	E		DN	P(2)	S
10	W06GIG-SM0091G	Rock Mechanics GK	2		2			K2_GIG_W10,W14,W18 K2_GIG_U04,U07,U10	60	150	5	3	3	T	E		DN	P(3)	S
11	W06GIG-SM0092G	Applied Geodesy GK	2		2			K2_GIG_W10 K2_GIG_U04,U07,U15	60	120	4	2	2	T	E		DN	P(2)	S
12	W06GIG-SM0093G	Selected Aspects of Engineering Surveying in Mining and Tunnelling GK	2		3			K2_GIG_W07,W09 K2_GIG_U04,U07,U15	75	180	6	6	4	T	E		DN	P(4)	S

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

13	W06GIG-SM0094W	Mine Mapping	2					K2_GIG_W18 K2_GIG_U07,U08 K2_GIG_K02	30	90	3	2	1	T	Z		DN	P(1)	S
14	W06GIG-SM0086G	CAD-Constructions in Tunneling	1		1			K2_GIG_W18 K2_GIG_U04,U07	30	90	3	2	1	T	Z		DN	P(2)	S
15	GIG-SM1111AN	Free elctive	2					K2_GIG_W07 K2_GIG_K03	30	90	3		2	T	Z				S
16	GIG-SM3111AN	Free Elective	2					K2_GIG_W07 K2_GIG_K03	30	60	2		2	T	Z				S
17	GIG-SM3111AN	Free Elective	2					K2_GIG_W07 K2_GIG_K03	30	60	2		2	T	Z				S
18	GIG-SM3111AN	Free Elective	2					K2_GIG_W07 K2_GIG_K03	30	60	2		2	T	Z				S
19	GIG-SM3111AN	Free Elective	2					K2_GIG_W07 K2_GIG_K03	30	60	2		2	T	Z				S
20	W06GIG-SM0095C	Compulsory Internship		2				K2_GIG_W09 K2_GIG_U09,U15 K2_GIG_K01	30	150	5	5	5		Z		DN	P(5)	S
		Total	**29**	**4**	**14**	**3**	**0**		**750**	**1830**	**61**	**43**	**44**					**35**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.2.4.2 *Diploma (e.g. diploma profile)* block *(30 ECTS points):*

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM0070S	Diploma Seminar					2	K2_GIG_W01 K2_GIG_U01,U13 K2_GIG_K03	30	60	2	2	1	T	Z		DN	P(2)	S
2	W06GIG-SM0054D	Master Thesis		1				K2_GIG_W01,W05,W10 K2_GIG_U01,U04, U08,U10,U13,U15 K2_GIG_K01,K03	15	840	28	28	5	T	Z		DN	P(28)	S
		Total	**0**	**1**	**0**	**0**	**2**		**45**	**900**	**30**	**30**	**6**					**30**	

Altogether for specialization blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
29	**5**	**14**	**3**	**2**	**795**	**2730**	**91**	**73**	**50**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

4.3 Training block - concerning principles of training crediting – attachment no. …

Opinion of the Advisory Faculty Council concerning the rules of crediting training block

Name of training			
Number of ECTS points	**Number of ECTS points for BU[1] classes**	**Training crediting mode**	**Code**

Training duration	Training objective

4.4 „Diploma dissertation" block (*if it is foreseen at first level studies)*

Type of diploma dissertation	Licencjat / inżynier / magister / magister inżynier*	
Number of diploma dissertation semesters	**Number of ECTS points**	**Code**
1	**28**	**W06GIG-SM0054D**
Character of diploma dissertation		
Literature survey, project, computer program, etc.		
Number of BU[1] ECTS points	**5**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

5. Ways of verifying assumed learning outcomes

Type of classes	Ways of verifying assumed learning outcomes
lecture	e.g. examination, progress/final test
class	e.g. progress/final test
laboratory	e.g. pretest, report from laboratory
project	e.g. project defence
seminar	e.g. participation in discussion, topic presentation, essay
training	e.g. report from training
diploma dissertation	prepared diploma dissertation

6. Range of diploma examination

1. Stochastic interpretation of numerical values of a given feature, measured at points with known spatial location.
2. Covariance, correlation and semivariance as measures of continuity of a regionalized variable.
3. Variogram and methods of its modelling.
4. Assessment of the linear error of the estimator of the local value of a given feature.
5. Factors influencing the error value.
6. Kriging, its properties and types.
7. Securing people during an underground fire, escape routes.
8. Occupational risk - assessment methods, estimating occupational risk.
9. Geophysical methods of exploration and identification of deposits.
10. Computer aided exploration and identification of deposits.
11. Basic principles of corporate finance management.
12. Methods of assessing the profitability of investments and their applications.
13. Decision models used in management.
14. Types of environmental management systems.
15. Types and systematics of operations, information model of operations, concepts of system and operation process, efficiency, reliability, effective working time.

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

16. Methods of reclamation of post-mining land.
17. Assessment of the accuracy of geodetic measurements.
18. The measurement network used for surveys in mines.
19. Absolute and relative deformation monitoring methods.
20. Geodetic networks for determining deformations and displacements of engineering structures.
21. Geodetic surveys in recognition and development of mineral deposits.
22. Methods of interpolation of measurement data.
23. Spatial data models in GIS.
24. Basic types of spatial analyses in GIS.
25. Types of mining damages and their geodetic monitoring.
26. The principle of assessing the accuracy of displacements.
27. Applications of remote sensing in environmental protection and management of the Earth's natural resources.
28. Advantages and disadvantages of using satellite radar interferometry in monitoring the activity of the land surface.
29. Differences between PsInSAR and SBAS methods.
30. Examples and description of selected remote sensing programs.
31. Methods of geodetic use of SAR images.
32. Applications of active remote sensing systems.
33. Advantages and disadvantages of multispectral and hyperspectral imaging.
34. model of errors of numerical terrain models.

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

7. Requirements concerning deadlines for crediting courses/groups of courses for all courses in particular blocks

No.	Course / group of courses code	Name of course / group of courses	Crediting by deadline of... (number of semester)
1	W06GIG-SM0037	Principles and Application of InSAR and GIS in mining	1-4
2	W06GIG-SM0038	Computer Aided Geological Modelling & Geostatistics	1-4
3	W06GIG-SM0039G	Project Management, Appraisal and Risk Evaluation	1-4
4	W06GIG-SM0040	Engineering Geophysics	1-4
5	W06GIG-SM0041G	Integrated Analysis of Deformations in Geomechanical Engineering	1-4
6	W06GIG-SM0042	Occupational Health and Safety	1-4
7	SJO-SM0003	Foreign language	1-4
8	SJO-SM0004	Foreign language	1-4
9	GIG-SM1111AN	Free elective	1-4
10	W06GIG-SM0080W	Spatial Planning	2-4
11	W06GIG-SM0081G	Risk Management in Mines	2-4
12	W06GIG-SM0082G	Deposit Modelling and Associated Software	2-4
13	W06GIG-SM0083G	Underground Mining	2-4
14	W06GIG-SM0084G	Mining Subsidence Engineering	2-4
15	W06GIG-SM0085G	Geotechnical Monitoring and Instrumentation	2-4
16	W06GIG-SM0086G	CAD-Constructions in Tunneling	2-4
17	W06GIG-SM0087P	Mine Surveying Project Study	2-4
18	W06GIG-SM0088W	Regulation of Mining Damages and Ensuring Land Use	2-4
19	W06GIG-SM0089G	Automatic Surface Inspection	2-4

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

20	*GIG-SM3111AN*	*Free Elective*	*2-4*
21	*W06GIG-SM0090G*	*Environmental Aspects of Mineral Extraction*	*3-4*
22	*W06GIG-SM0091G*	*Rock Mechanics*	*3-4*
23	*W06GIG-SM0092G*	*Applied Geodesy*	*3-4*
24	*W06GIG-SM0093G*	*Selected Aspects of Engineering Surveying in Mining and Tunnelling*	*3-4*
25	*W06GIG-SM0094W*	*Mine Mapping*	*3-4*
26	*W06GIG-SM0095C*	*Compulsory Internship*	*3-4*
27	*GIG-SM3111AN*	*Free Elective*	*3-4*
28	*W06GIG-SM0054D*	*Master Thesis*	*4*
29	*W06GIG-SM0070S*	*Diploma Seminar*	*4*

8. Plan of studies (attachment no. 4)

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Approved by faculty student government legislative body:

Patrycja Haraj
President of the Student Government
of the Faculty of Geoengineerin, Mining and Geology

.....
Date 21.10.2022

.....
name and surname, signature of student representative

DZIEKAN
prof. dr hab. inż. Radosław Zimroz

.....
Date 21.10.2022

.....
Dean's signature

Zał. nr 4 do ZW 16/2020
Attachment no. 4 to Program of Studies

PLAN OF STUDIES

FACULTY: Geoengineering, Mining and Geology

MAIN FIELD OF STUDY: Mining and geology

EDUCATION LEVEL: second-level studies

FORM OF STUDIES: full-time studies

PROFILE: general academic

SPECIALIZATION: Geomatics for Mineral Resources Management Pathway Leoben (Geomatyka w zarządzaniu surowcami mineralnymi)

LANGUAGE OF STUDY: English

In effect since academic year 2022/23

*delete as applicable

Plan of studies structure (optionally)

sem./ hours	1	ECTS	2	ECTS	3	ECTS	4	ECTS
1	Principles and Application of InSAR and GIS in mining 20300E W06GIG-SM0037	5	Spatial Planning 10000Z W06GIG-SM0080W	2	Environmental Aspects of Mineral Extraction 21000E W06GIG-SM0090G	3	Master Thesis 01000Z W06GIG-SM0054D	28
2			Risk Management in Mines10100E W06GIG-SM0081G	3				
3								
4			Deposit Modelling and Associated Software 10100E W06GIG-SM0082G	2	Rock Mechanics 20200E W06GIG-SM0091G	5		
5								
6	Computer Aided Geological Modelling & Geostatistics 10300Z W06GIG-SM0038	5	Underground Mining 21000E W06GIG-SM0083G	4				
7								
8					Applied Geodesy 20200E W06GIG-SM0092G	4		
9			Mining Subsidence Engineering 10200E W06GIG-SM0084G	3				
10	Project Management, Appraisal and Risk Evaluation 10210E W06GIG-SM0039G	4						
11								
12			Geotechnical Monitoring and Instrumentation 10100Z W06GIG-SM0085G	1,5	Selected Aspects of Engineering Surveying in Mining and Tunneling 20300E W06GIG-SM0093G	6		
13								
14	Engineering Geophysics 10010Z W06GIG-SM0040	3	CAD-Constructions in Tunneling 10100Z W06GIG-SM0086G	3				
15								
16	Integrated Analysis of Deformations in Geomechanical Engineering 20200E W06GIG-SM0041G	5	Mine Surveying Project Study 00030Z W06GIG-SM0087P	3			Diploma Seminar 00002Z W06GIG-SM0070S	2
17					Mine Mapping 20000Z W06GIG-SM0094W	3		
18								
19			Regulation of Mining Damages and Ensuring Land Use 10000Z W06GIG-SM0088W	1,5	Compulsory Internship 02000Z W06GIG-SM0095C	5		
20	Occupational Health and Safety 100100Z W06GIG-SM0042	2	Automatic Surface Inspection 10100E W06GIG-SM0089G	3				
21					Free elective 20000Z GIG-SM3111AN	2		
22	Foreign language I 03000Z SJO-SM0003	2	Free elective 20000Z GIG-SM3111AN	2				
23			Free elective 20000Z GIG-SM3111AN	2	Free elective 20000Z GIG-SM3111AN	2		
24								
25	Foreign language II 01000Z SJO-SM0004	1						
26	Free elective 20000Z GIG-SM1111AN	3						
27								
sum		**30**		**30**		**30**		**30**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

1. Set of obligatory and optional courses and groups of courses in semestral arrangement

Semester 1

Obligatory courses / groups of courses Number of ECTS points 24

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM0037	Principles and Application of InSAR and GIS in mining	2		3			K2_GIG_W15,W16,W18 K2_GIG_U04,U07,U08	75	150	5	5	4	T/Z(w)	E(w) Z(l)		DN	P(3)	K
2	W06GIG-SM0038	Computer Aided Geological Modelling & Geostatistics	1		3			K2_GIG_W06,W08,W15 K2_GIG_U04,U08,U14	60	150	5	3	4	T /Z(w)	Z(w,l)		DN	P (4)	PD
3	W06GIG-SM0039G	Project Management, Appraisal and Risk Evaluation (GK)	1		2	1		K2_GIG_W10,W14 K2_GIG_U04,U08,U10,U15 K2_GIG_K01	60	120	4	4	3	T/Z(w)	E(w), Z(l,p)		DN	P (3)	KO
4	W06GIG-SM0040	Engineering Geophysics	1			1		K2_GIG_W02,W08,W10 K2_GIG_U04,U13	30	90	3	3	2	T /Z(w)	Z		DN	P(2)	PD
5	W06GIG-SM0041G	Integrated Analysis of Deformations in Geomechanical Engineering (GK)	2		2			K2_GIG_W07,W13,W14 K2_GIG_U07,U08,U10	60	150	5	5	4	T /Z(w)	E, Z		DN	P(3)	K
6	W06GIG-SM0042	Occupational Health and Safety	1			1		K2_GIG_W11,W12,W14, W17 K2_GIG_U11, K2_GIG_K02, K03	30	60	2	2	2	T /Z(w)	Z		DN	P(1)	K
		Total	**8**	**0**	**10**	**3**	**0**		**315**	**720**	**24**	**22**	**19**					**16**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Optional courses / groups of courses (6 ECTS points)

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	SJO-SM0003	Foreign Language I		3				K2_GIG_ U03	45	60	2		1	T	Z	O		P (2)	KO
2	SJO-SM0004	Foreign Language II		1				K2_GIG_U01,U02	15	30	1		0,5	T	Z	O		P(1)	KO
3	GIG-SM1111AN	Free elctive	2					K2_GIG_W07 K2_GIG_K03	30	90	3		2	T	Z				S
		Total	**2**	**4**	**0**	**0**	**0**		**90**	**180**	**6**		**3,5**					**3**	

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
10	**4**	**10**	**3**	**0**	**405**	**900**	**30**	**22**	**22,5**

Semester 2

Obligatory courses / groups of courses Number of ECTS points 2

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM0080W	Spatial planning	1					K2_GIG_W10,W14 K2_GIG_U11,U13 K2_GIG_K02, K03	15	60	2		1	T	Z				KO
		Total	**1**	**0**	**0**	**0**	**0**		**15**	**60**	**2**	**0**	**1**					**0**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Optional courses / groups of courses (28 ECTS points)

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical [6]	Type[7]
1	W06GIG-SM0081G	Risk Management in Mines GK	1		1			K2_GIG_W05,W09,W11, W14,W17 K2_GIG_U11,U12	30	90	3	3	1	T	E		DN	P(1)	S
2	W06GIG-SM0082G	Deposit Modelling and Associated Software GK	1		1			K2_GIG_W06,W15 K2_GIG_U04 K2_GIG_K03	30	60	2	2	1	T	Z		DN	P(1)	S
3	W06GIG-SM0083G	Underground Mining GK	2	1				K2_GIG_W07,W09,W19 K2_GIG_U04,U07,U09	45	120	4	4	2	T	E		DN	P(4)	S
4	W06GIG-SM0084G	Mining Subsidence Engineering GK	1		2			K2_GIG_W07,W10,W16 K2_GIG_U07 K2_GIG_K03	45	90	3	5	4	T	E		DN	P(3)	S
5	W06GIG-SM0085G	Geotechnical Monitoring and Instrumentation GK	1		1			K2_GIG_W07,W10,W18 K2_GIG_U07	30	45	1,5	1	1	T	Z		DN	P(1)	S
6	W06GIG-SM0086G	CAD-Constructions in Tunneling GK	1		1			K2_GIG_W18 K2_GIG_U04,U07	30	90	3	2	1	T	Z		DN	P(2)	S
7	W06GIG-SM0087P	Mine Surveying Project Study				3		K2_GIG_U07,U10,U15	45	90	3	3	3	T	Z		DN	P(3)	S
8	W06GIG-SM0088W	Regulation of Mining Damages and Ensuring Land Use	1					K2_GIG_W05,W11,W13 K2_GIG_U05 K2_GIG_K02,K03	15	45	1,5	1	1	T	Z		DN	P(1)	S
9	W06GIG-SM0089G	Automatic Surface Inspection GK	1		1			K2_GIG_W14,W16 K2_GIG_U07,U08	30	90	3	2	1	T	Z		DN	P(2)	S
10	GIG-SM3111AN	Free Elective	2					K2_GIG_W07 K2_GIG_K03	30	60	2		2	T	Z				S
11	GIG-SM3111AN	Free Elective	2					K2_GIG_W07 K2_GIG_K03	30	60	2		2	T	Z				S
		Total	**13**	**1**	**7**	**3**	**0**		**360**	**840**	**28**	**23**	**19**					**18**	

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
14	**1**	**7**	**3**	**0**	**375**	**900**	**30**	**23**	**20**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Semester 3

Obligatory courses / groups of courses Number of ECTS points 0

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
		Total																	

Optional courses / groups of courses (30 ECTS points)

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University-wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM0090G	Environmental Aspects of Mineral Extraction GK	2	1				K2_GIG_W04,W11,W12,W13 K2_GIG_U05,U10,U12,U15 K2_GIG_K02,K03	45	90	3	2	4	T	E		DN	P(2)	
2	W06GIG-SM0091G	Rock Mechanics GK	2		2			K2_GIG_W10,W14,W18 K2_GIG_U04,U07,U10	60	150	5	3	3	T	E		DN	P(3)	
3	W06GIG-SM0092G	Applied Geodesy GK	2		2			K2_GIG_W10 K2_GIG_U04,U07,U15	60	120	4	2	2	T	E		DN	P(2)	
4	W06GIG-SM0093G	Selected Aspects of Engineering Surveying in Mining and Tunnelling GK	2		3			K2_GIG_W07,W09 K2_GIG_U04,U07,U15	75	180	6	6	4	T	E		DN	P(4)	
5	W06GIG-SM0094W	Mine Mapping	2					K2_GIG_W18 K2_GIG_U07,U08 K2_GIG_K02	30	90	3	2	1	T	Z		DN	P(1)	
6	W06GIG-SM0095C	Compulsory Internship		2				K2_GIG_W09 K2_GIG_U09,U15 K2_GIG_K01	30	150	5	5	5		Z		DN	P(5)	S
7	GIG-SM3111AN	Free Elective	2					K2_GIG_W07 K2_GIG_K03	30	60	2		2	T	Z				S
8	GIG-SM3111AN	Free Elective	2					K2_GIG_W07 K2_GIG_K03	30	60	2		2	T	Z				S
		Total	**14**	**3**	**7**	**0**	**0**		**360**	**900**	**30**	**20**	**23**					**17**	

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
14	**3**	**7**	**0**	**0**	**360**	**900**	**30**	**20**	**23**

Semester 4

Optional courses / groups of courses (30 ECTS points)

No.	Course/ group of courses code	Name of course/group of courses (denote group of courses with symbol **GK**)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form[2] of course/group of courses	Way[3] of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN[5] classes	BU[1] classes			University -wide[4]	Concerning scientific activities[5]	Practical[6]	Type[7]
1	W06GIG-SM0070S	Diploma Seminar					2	K2_GIG_W01 K2_GIG_U01,U13 K2_GIG_K03	30	60	2	2	1	T	Z		DN	P(2)	S
2	W06GIG-SM0054D	Master Thesis		1				K2_GIG_W01,W05,W10 K2_GIG_U01,U04, U08,U10,U13,U15 K2_GIG_K01,K03	15	840	28	28	5	T	Z		DN	P(28)	S
		Total	**0**	**1**	**0**	**0**	**2**		**45**	**900**	**30**	**30**	**6**					**30**	

Altogether in semester

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for DN classes[5]	Number of ECTS points for BU classes[1]
lec	cl	lab	pr	sem					
0	**1**	**0**	**0**	**2**	**45**	**900**	**30**	**30**	**6**

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

2. Set of examinations in semestral arrangement

Course / group of courses code	Names of courses / groups of courses ending with examination	Semester
W06GIG-SM0037	1. Principles and Application of InSAR and GIS in mining	1
W06GIG-SM0039G	2. Project Management, Appraisal and Risk Evaluation	1
W06GIG-SM0041G	3. Integrated Analysis of Deformations in Geomechanical Engineering	1
W06GIG-SM0081G	1. Risk Management in Mines Underground Mine Surveying	2
W06GIG-SM0086G	2. Underground Mining	2
W06GIG-SM0084G	3. Mining Subsidence Engineering	2
W06GIG-SM0090G	1. Environmental Aspects of Mineral Extraction	3
W06GIG-SM0091G	2. Rock Mechanics	3
W06GIG-SM0092G	3. Applied Geodesy	3
W06GIG-SM0093G	4. Selected Aspects of Engineering Surveying in Mining and Tunneling	3

3. Numbers of allowable deficit of ECTS points after particular semesters

Semester	Allowable deficit of ECTS points after semester
1	12
2	12
3	8
4	0

[1]BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes
[2]Traditional – enter T, remote – enter Z
[3]Exam – enter E, crediting – enter Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)
[4]University-wide course /group of courses – enter O
[5]DN - number of ECTS points assigned to the classes related to the University's academic activity in the discipline/disciplines to which the main field of study is assigned
[6]Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses
[7]KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Opinion of student government legislative body

Patrycja Haraj

Patrycja Haraj
President of the Student Government
of the Faculty of Geoengineerin, Mining and Geology

.....
Date 21.10.2022

.....
name and surname, signature of student representative

DZIEKAN
prof. dr hab. inż. Radosław Zimroz

.....
Date 21.10.2022

.....
Dean's signature