

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 (3 semesters)

FORM OF STUDIES: full-time studies

PROFILE: general academic

LANGUAGE OF STUDY: English

Content:

1. Assumed learning outcomes – attachment no. 1 to the program of studies
2. Program of Studies description – attachment no. 2 to the program of studies
3. Plan of Studies – attachment no. 3 to the program of studies

In effect since 2024/2025

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 geoen지니어ing, 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_inž P7S_WK_inž
K2_GIG_W09	has knowledge of the operation of mining or geoenvironmental enterprises as well as about their production management and optimization		P7S_WG P7S_WK	P7S_WG_inž P7S_WK_inž
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_inž P7S_WK_inž
K2_GIG_W11	knows the formal and legal conditions in the fields of geology, mining, geoenvironmental, 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_inž P7S_WK_inž
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_inž P7S_WK_inž
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_inž
K2_GIG_W15	has basic knowledge of computer modelling of geological structures, computer-aided design, and monitoring of mining or geoenvironmental objects	P7U_W	P7S_WG P7S_WK	P7S_WG_inž P7S_WK_inž
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_inž

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 themselves 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_inž
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_inž
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_inž
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_inž
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_inž
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_inž
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_inž

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_inž
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_inž
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

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**

<i>1.1 Number of semesters: 3</i>	<i>1.2 Total number of ECTS points necessary to complete studies at a given level: 90</i>
<i>1.3 Total number of hours: 990</i>	<i>1.4 Prerequisites (particularly for second-level studies): Bachelor of Science in Engineering diploma, interview</i>
<i>1.5 Upon completion of studies graduate obtains a professional degree of: magister inżynier</i>	<p><i>1.6 Graduate profile, employability:</i> <i>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.</i></p> <p><i>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.</i></p>

	<p><i>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.</i></p> <p><i>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.</i></p>
<p><i>1.7 Possibility of continuing studies: eligibility to apply for admission to a doctoral school, non-degree postgraduate programmes</i></p>	<p><i>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 a theoretical background and practical abilities, as well as have interpersonal skills and cross-cultural experience (C5).</i></p>

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

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.

2. Detailed description

**2.1 Total number of learning outcomes in the program of study: W (knowledge) = 19, U (skills) = 15, K (competencies) = 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) 69 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)~~

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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 favourably shape the labour market for the graduates of the Faculty. Additionally, a good command of English and experience in working in international groups will open up the possibility of working in foreign branches of Polish enterprises and 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 BU¹ code) **48,8 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	46
Total number of ECTS points	68

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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)

54 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 labour 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.

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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/gr oup 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	Concerni ng 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

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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/gr oup 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	Concerni ng scientific activities ⁵	Practical ⁶	Type ⁷
1	W06GIG- SM3002W	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- SM3002L	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/gr oup 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	Concerni ng 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
2	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

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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/gr oup of courses	Way ³ of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN ⁵ clas ses	BU ¹ clas ses			Unive rsity- 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		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	

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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 (30 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	GIG-SM2004ANG	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	

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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/gr oup 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	Concerni ng 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					
9	5	4	9	2	435	1275	51	40	22,8

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	

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

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 BU¹ ECTS points	1,8	

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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 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. Factors controlling metal prices and long-term trends in exploration and ore extraction.
14. Strategies for selecting target areas in exploration and the importance of local conditions.
15. Cut-off theory and its effect on the size and grade of mineral resources.
16. Technology and innovation management.
17. Circular economy for materials processing.

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

18. Research methodology.
19. Advanced process design.
20. The modifying factors that affect the conversion of mineral resources to mineral reserves.
21. The importance of different strategies for grade control and mine mapping in operating mines.
22. Basic geochemical processes that control geochemical anomalies and their application during exploration.
23. Mobility of elements at the Earth's surface. Ion exchange and sorption.
24. Advances in technology and methods of future mining operations.
25. Aims, benefits, and drawbacks of automation and industrial revolutions.
26. Applications of Interferometric Synthetic Aperture Radar.
27. Applications of map algebra and spatial statistics to determine surface deformation models.
28. Sedimentary environments.
29. Definitions of terms: ore mineral and industrial mineral. Classifications of industrial minerals.
30. Rock-forming processes.
31. Characteristic of a selected minerals group.
32. Water management issues.
33. Sustainability and protection of groundwater.
34. Vulnerability of groundwater.

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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-SM3003G	Principles and Application of InSAR and GIS in mining	1-3
2	W06GIG-SM3002	Computer Aided Geological Modelling & Geostatistics	1-3
3	W06GIG-SM3003G	Project Management, Appraisal and Risk Evaluation	1-3
4	W06GIG-SM3004	Engineering Geophysics	1-3
5	W06GIG-SM3001	Environmental Management	1-3
6	W06GIG-SM3005	Occupational Health and Safety	1-3
7	SJO-SM0003	Foreign language 1	1-3
8	SJO-SM0004	Foreign language 2	1-3
9	W06GIG-SM3006	Digital Mine	1-3
10	W06GIG-SM3000	Operations Research	1-3
11	W06GIG-SM3056G	Modelling of Unit Operations	2-3
12	W06GIG-SM3057G	Advanced Process Design	2-3
13	W06GIG-SM3058G	Research Methodology	2-3
14	W06GIG-SM3059G	Circular Economy for Materials Processing	2-3
15	W06GIG-SM3060G	Technology and Innovation Management Introduction	2-3
16	W06GIG-SM3061G	Solid-Liquid Separation	2-3
17	GIG-SM2004ANG	Elective Subjects Block I	2-3
18	W06GIG-SM3063G	Integrated Analysis of Deformations in Geomechanical Engineering	3
19	W06GIG-SM3062P	Industrial Research Internship Project	1-3
20	W06GIG-SM3064P	Field Academy Student Project	1-3
21	W06GIG-SM3015D	Master Thesis	3
22	W06GIG-SM3014S	Diploma Seminar	3

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

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Approved by faculty student government legislative body:

08.11.2023

.....
Date

08.11.2023

.....
Date

POLITECHNIKA WROCLAWSKA
WYDZIAŁ GEOINŻYNIERII
GÓRNICWA I GEOLOGII
Samorząd Studencki Wydziału Geoinżynierii,
Górnictwa i Geologii
50-421 Wrocław, Na Grebli 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

DZIEKAN

Radosław Zimroz

.....
prof. dr hab. inż. Radosław Zimroz

(1)
Dean's signature

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

LANGUAGE OF STUDY: English

In effect since academic year 2024/2025

Studies' plan structure (optional)

1) in ECTS format

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

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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/g 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				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,U12 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 K2_GIG_U11, K2_GIG_K02, K03	15	25	1	1	0,7	T/Z(w)	Z		DN		K

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

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							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					15	

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	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

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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-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	

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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

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 courses / groups of courses (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

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

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-SM3007W	2. Principles and Applications of InSAR and GIS 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-SM3063G	1. Integrated Analysis of Deformations in Geomechanical Engineering	3
	2. Final diploma examination	3

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

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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

08.11.2023

.....
Date

POLITECHNIKA WROCLAWSKA
WYDZIAŁ GEOINŻYNIERII
GÓRNICICTWA 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 Geoen지니어ing, Mining and Geology
name and surname, signature of student representative

DZIEKAN

Radosław Zimroz

.....
prof. dr hab. inż. Radosław Zimroz

(s)
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 Lulea**

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**

<i>1.1 Number of semesters: 3</i>	<i>1.2 Total number of ECTS points necessary to complete studies at a given level: 90</i>
<i>1.3 Total number of hours: 1035</i>	<i>1.4 Prerequisites (particularly for second-level studies): Bachelor of Science in Engineering diploma, interview</i>
<i>1.5 Upon completion of studies graduate obtains professional degree of: magister inżynier - 2nd degree qualifications</i>	<p><i>1.6 Graduate profile, employability:</i></p> <p><i>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.</i></p> <p><i>They will be prepared to work in enterprises, technical supervision institutions, public state and local administration, in research and development organisations, in Poland and</i></p>

	<p><i>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.</i></p>
<p><i>1.7 Possibility of continuing studies: eligibility to apply for admission to a doctoral school, non-degree postgraduate programmes</i></p>	<p><i>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.</i></p>

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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) 62 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)~~

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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 BU¹ code) **49,3 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	42,5
Total number of ECTS points	65,5

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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)

54 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

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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/gr oup 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	Concerni ng 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

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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/gr oup 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	Concerni ng 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/gr oup 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	Concerni ng 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
2	W06GIG- SM3004P	Engineering Geophysics				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

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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/gr oup of courses	Way ³ of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN ⁵ clas ses	BU ¹ clas ses			Unive rsity- 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	

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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 (30 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/gr oup of courses	Way ³ of crediting	Subject/group of classes			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN ⁵ classes	BU ¹ classes			Universi ty-wide ⁴	Concerni ng scientific activities ⁵	Practical ⁶	Type ⁷
1	W06GIG- SM3011P	Senior design project in ore geology				8		K2_GIG_W01, K2_GIG_U08,U10,U13 K2_GIG_K01,K03	120	187,5	7,5	3	5,3	T /Z	Z		DN	P(7,5)	S
2	W06GIG- SM3008G	Exploration GK	5			2		K2_GIG_W02,W07,W08,W10,W11, W14 K2_GIG_U08,U10,U13,U15 K2_GIG_K01,K03	105	187,5	7,5	3	4,8	T /Z(w)	E, Z		DN	P(3)	S
3	W06GIG- SM3009G	Geochemical exploration GK	3			4		K2_GIG_W02,W07,W08, W10, W14 K2_GIG_U08,U10 K2_GIG_K03	105	187,5	7,5	5	4,8	T /Z(w)	E, Z		DN	P(4)	S
4	W06GIG- SM3010G	Mining geology GK	4			4		K2_GIG_W03,W05,W07,W08,W10, W14,W15,W16,W18 K2_GIG_U04,U06,U10,U13,U15 K2_GIG_K01,K02,K03	120	187,5	7,5	5	5,4	T /Z(w)	E, Z		DN	P(4)	K
Total			12	0	0	18	0		450	750	30	16	20,3					18,5	

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/gr oup 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	Concerni ng 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	

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

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					
12	0	0	19	1	480	1275	51	37	22,9

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	

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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. Geological and geochemical exploration methods
14. Factors controlling metal prices and long-term trends in exploration and ore extraction.
15. Strategies for selecting target areas in exploration and the importance of local conditions
16. Cut-off theory and its effect on size and grade of mineral resources
17. Different drilling methods, logging and sampling of drill cores

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

18. The modifying factors which affect conversion of mineral resources to mineral reserves
19. The importance of different strategies for grade control and mine mapping in operating mines
20. Basic geochemical processes that control geochemical anomalies and their application during exploration
21. Mobility of elements at the Earth surface. Ion exchange and sorption
22. Advances of technology & methods of future mining operations.
23. Aims, benefits, drawbacks of automation and industrial revolutions.
24. Applications of Interferometric Synthetic Aperture Radar.
25. Applications of map algebra and spatial statistics to determine surface deformation models.
26. Sedimentary environments
27. Rock-forming processes
28. Characteristic of a selected minerals group
29. Plate tectonics and large scale structures
30. Water management issues
31. Sustainability and protection of groundwater
32. Vulnerability of groundwater
33. Laws and regulations related to exploration and exploitation of minerals / water

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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-SM3003G	Principles and Application of InSAR and GIS in mining	1-3
2	W06GIG-SM3002	Computer Aided Geological Modelling & Geostatistics	1-3
3	W06GIG-SM3003G	Project Management, Appraisal and Risk Evaluation	1-3
4	W06GIG-SM3004	Engineering Geophysics	1-3
5	W06GIG-SM3001	Environmental Management	1-3
6	W06GIG-SM3005	Occupational Health and Safety	1-3
7	SJO-SM0003	Foreign language 1	1-3
8	SJO-SM0004	Foreign language 2	1-3
9	W06GIG-SM3006	Digital Mine	1-3
10	W06GIG-SM3000	Operations Research	1-3
11	W06GIG-SM3011P	Senior design project in ore geology	2-3
12	W06GIG-SM3008G	Exploration	2-3
13	W06GIG-SM3010G	Mining geology	2-3
14	W06GIG-SM3009G	Geochemical exploration	2-3
15	W06GIG-SM3012G	Exploration Entrepreneurship	1-3
16	W06GIG-SM3013P	SOC Internship	1-3
17	W06GIG-SM3016P	Applied Field Exploration	1-3
18	W06GIG-SM3015D	Master Thesis	3
19	W06GIG-SM3014S	Diploma Seminar	3

8. Plan of studies (attachment no. 4)

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Approved by faculty student government legislative body:

POLITECHNIKA WROCLAWSKA
WYDZIAŁ GEOINŻYNIERII
GÓRNICICTWA 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

28.09.23

Date

DZIEKAN

prof. dr hab. inż. Radosław Zimroz

.....
Dean's signature

28.09.23

Date

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 Lulea

LANGUAGE OF STUDY: English

In effect since academic year 2023/24

	Summer		Winter		Summer			
semester	1	ECTS	2	ECTS	3	ECTS		
hours	WUST		LTU		WUST			
1	Operations Research 10100Z W06GIG- SM3000	3	Exploration 50020E W06GIG-SM3008G	7,5	Exploration entrepreneurship (EFG) 10012Z W06GIG-SM3012G	4		
2								
3	Environmental Management 20001Z W06GIG-SM3001	3					SOC Internship 00020Z W06GIG-SM3013P	2
4								
5								
6	Computer Aided Geological Modelling & Geostatistics 10300Z W06GIG- SM3002	5			Geochemical exploration 30040E W06GIG-SM3009G	7,5	Diploma Seminar 00001Z W06GIG-SM3014S	1
7								
8								
9								
10	Project Management, Appraisal and Risk Evaluation 10210E W06GIG- SM3003G	4	Master Thesis W06GIG-SM3015D	20				
11								
12								
13								
14	Engineering Geophysics 10010 Z W06GIG- SM3004	3	Mining geology 40040E W06GIG-SM3010G	7,5			Applied field exploration 00030Z W06GIG-SM3016P	3
15								
16	Occupational Health and Safety 100100Z W06GIG- SM3005	2						
17								
18	Foreign Language 1 03000 Z SJO- SJO- SM0003	2						
19								
20	Digital Mine 10100 Z W06GIG- SM3006	2						
21								
22	Principles and Application of InSAR and GIS in mining 20300E W06GIG- SM3007	5	Senior design project in ore geology 00080Z	7,5				
23								
24								
25								
26								
27	Foreign Language 2 01000 Z SJO- SM0004	1						
28								
29								
30								
31								
Total ECTS		30		30		30		

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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/g 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				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,U12 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	1		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 K2_GIG_U11, K2_GIG_K02, K03	15	25	1	1	0,7	T/Z(w)	Z		DN		K

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

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							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					15	

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

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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-SM3011P	Senior design project in ore geology				8		K2_GIG_W01, K2_GIG_U08,U10,U13 K2_GIG_K01,K03	120	187,5	7,5	3	5,3	T/Z	Z		DN	P(7,5)	S
2	W06GIG-SM3008G	Exploration GK	5			2		K2_GIG_W02,W07,W08,W10,W11, W14 K2_GIG_U08,U10,U13,U15 K2_GIG_K01,K03	105	187,5	7,5	3	4,8	T/Z(w)	E, Z		DN	P(3)	S
3	W06GIG-SM3010G	Mining geology GK	4			4		K2_GIG_W03,W05,W07,W08,W10, W14,W15,W16,W18 K2_GIG_U04,U06,U10,U13,U15 K2_GIG_K01,K02,K03	120	187,5	7,5	5	5,4	T/Z(w)	E, Z		DN	P(4)	K
4	W06GIG-SM3009G	Geochemical exploration GK	3			4		K2_GIG_W02,W07,W08, W10, W14 K2_GIG_U08,U10 K2_GIG_K03	105	187,5	7,5	5	4,8	T/Z(w)	E, Z		DN	P(4)	S
Total			12	0	0	18	0		450	750	30	16	20,3					18,5	

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	0	0	18	0	450	750	30	16	20,3

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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 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 courses / groups of courses (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	

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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-SM3007W	2. Principles and Applications of InSAR in Mining	1
W06GIG-SM3008G	1. Exploration	2
W06GIG-SM3010G	2. Mining geology	2
W06GIG-SM3009G	3. Geochemical exploration	2
	Final diploma examination	3

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

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide subject /group of classes – enter O

⁵DN - 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

⁶Practical subject / group of classes – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Opinion of student government legislative body

POLITECHNIKA WROCLAWSKA
WYDZIAŁ GEOINŻYNIERII
GÓRNICICTWA I GEOLOGII
Samorząd Studencki Wydziału Geoinżynierii,
Górnictwa i Geologii
50-421 Wrocław, Na Grebli 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

28.09.23

DZIEKAN
RD
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: **Mining Engineering**

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**

<i>1.1 Number of semesters: 3</i>	<i>1.2 Total number of ECTS points necessary to complete studies at a given level: 90</i>
<i>1.3 Total number of hours: 960</i>	<i>1.4 Prerequisites (particularly for second-level studies):</i> professional title of an engineer, interview
<i>1.5 Upon completion of studies graduate obtains</i> professional degree of: Master of Science (magister inżynier)	<i>1.6 Graduate profile, employability:</i> The graduate 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 geomechanics is required. The graduate will be able to use English freely and will be prepared to work in an

	<i>international environment and intercultural groups during his/her professional career.</i>
<i>1.7 Eligibility to apply for admission to a doctoral school, non-degree postgraduate programmes</i>	<p><i>1.8 Indicate connection with University's mission and its development strategy:</i></p> <p>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:</p> <ol style="list-style-type: none"> 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

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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) 78 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)~~

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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 BU¹ code) **62 ECTS**

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

Number of ECTS points for obligatory subjects	4
Number of ECTS points for optional subjects	0
Total number of ECTS points	4

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	39
Total number of ECTS points	57

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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)

55 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

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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.	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/gr oup 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	Concerni ng 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
2	W06GIG- SM0079	Operations Research	1		1			K2_GIG_W06 K2_GIG_U10,U14 K2_GIG_K01	30	90	3	3	2	T/Z(w)	Z(w,l)		DN	P (2)	KO
Total			2	0	3	1	0		90	210	7	7	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					
2	0	3	1	0	90	210	7	7	5

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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/gr oup 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	Concerni ng 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		

4.1.2.3 Chemistry 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/gr oup 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	Concerni ng scientific activities ⁵	Practical ⁶	Type ⁷
1	W06GIG- SM0076	Geochemistry	2					K2_GIG_W02,W10K2 GIG_K03	30	60	2	2	2	T/Z(w)	Z		DN		PD
Total			2	0	0	0	0		30	60	2	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					
3	0	1	0	0	60	120	4	2	4

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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/gr oup of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN ⁵ classes	BU ¹ classes			Unive rsity- 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- SM0068	Excavation Design in Open Pit Mining	2			1		K2_GIG_W07,W09,W10, W14,W18,W19 K2_GIG_U07,U10,U15 K2_GIG_K02	45	150	5	5	4	T/Z(w)	E, Z		DN	P(2)	K
3	W06GIG- SM0043 G	Theory and Practice in Geomechanics (GK)	4	1				K2_GIG_W10,W14 K2_GIG_U04,U08,U10,U15	75	180	6	6	5	T/Z(w)	E,Z		DN	P(2)	K
4	W06GIG- SM0042	Occupational Health and Safety	1			1		K2_GIG_W11,W12,W14,W1 7, K2_GIG_U11, K2_GIG_K02, K03	30	60	2	2	2	T/Z(w)	Z		DN	P(1)	K
5	W06GIG- SM0073	Tunnel and Underground Excavation Design	2			2		K2_GIG_W07,W09,W10, W14,W16,W18,W19 K2_GIG_U07,U10,U15 K2_GIG_K02	60	150	5	5	4	T/Z(w)	E, Z		DN	P(3)	K
6	W06GIG- SM0078	Environmental Management	2				1	K2_GIG_W04,W12,W13, W18 K2_GIG_U05,U10,U11 K2_GIG_K02,K03	45	90	3	3	2	T/Z(w)	Z		DN	P(1)	K
Total			11	1	2	4	1		285	720	24	24	19					12	

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					
11	1	2	4	1	285	720	24	24	19

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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/gr oup 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	Concerni ng scientific activities ⁵	Practical ⁶	Type ⁷
1	SJO- SM0003	Foreign Language		3				K2_GIG_U03	45	60	2		1	T	Z	O		P (2)	KO
2	SJO- SM0004	Foreign Language		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	

4.2.1.4 Information technologies block (min. 2 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/gr oup 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	Concerni ng scientific activities ⁵	Practical ⁶	Type ⁷
1	W06GIG- SM0077	AutoCad			2			K2_GIG_U20	30	60	2	0	1,5	T	Z(l)			P (2)	KO
Total			0	0	2	0	0		30	60	2	0	1,5					2	

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	2	0	0	90	150	5	0	3

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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 (33 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/gr oup of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN ⁵ classes	BU ¹ classes			Universi ty-wide ⁴	Concerni ng 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)	S
2	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)	S
3	W06GIG- SM0072	Machinery Systems	2		1	1		K2_GIG_W07,W09,W18,W19 K2_GIG_U04,U07,U08,U10	60	180	6	6	5	T/Z(w)	E, Z		DN	P(4)	S
4	W06GIG- SM0038	Computer Aided Mine Design	1		3			K2_GIG_W06,W07,W11,W12, W15,W18 K2_GIG_U04,U07,U08,U14,U15 K2_GIG_K01	60	150	5	5	4	T	E, Z		DN	P(3)	S
5	W06GIG- SM0075	Ventilation and Mine Fires	1			2		K2_GIG_W07,W10,W13,W16 K2_GIG_U04,U07,U08,U14,U15 K2_GIG_K02	45	120	4	4	3	T/Z(w)	E, Z		DN	P(2)	S
6	W06GIG- SM0067	Mineral Processing Systems	1			2		K2_GIG_W07,W12,W18 K2_GIG_U04,U05,U07,U15	45	90	3	3	2	T/Z(w)	E, Z		DN	P(2)	S
7	W06GIG- SM0069	Digital Mine	1		1			K2_GIG_W07,W12,W18,W19 K2_GIG_U04,U07,U08	30	60	2	2	1	T/Z(w)	Z		DN	P(1)	S
8	GIG- SM1111AN	Free Elective	2					K2_GIG_W07 K2_GIG_K03	30	90	3		2	T	Z				S
9	GIG- SM3111AN	Free Elective	2					K2_GIG_W07 K2_GIG_K03	30	60	2		2	T	Z				S
Total			13	0	7	6	0		390	990	33	28	25					17	

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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 (17 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/gr oup 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	Concerni ng 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	450	15	15	5	T	Z		DN	P(15)	S
Total			0	1	0	0	2		45	510	17	17	6					17	

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					
13	1	7	6	2	435	1500	50	45	31

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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
5	5	Z	
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	15	W06GIG-SM0054D
Character of diploma dissertation		
Literature survey, project, computer program, etc.		
Number of BU ¹ ECTS points	5	

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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. Basic technologies of open pit exploitation
2. Machinery used in surface mining
3. Opening-up a surface mine. Development workings
4. Overburden stripping and dumping; Dumps; Dump slopes and their stability.
5. In-situ stresses. Methods for stress analysis.
6. Rock mass discontinuities and their strength. Slope stability problems and rock fall hazard.
7. Floor strata behavior in room-and-pillar mining. Interaction of roof, pillar and floor.
8. Surface subsidence due to underground mining. Structures resistance against earthquake and mining related motion
9. Occupational risk assessment methods. Identification of harmful, dangerous and nuisance factors in the work environment.
10. Costs as the subject of cost accounting. Variable and fixed costs. Break even point.
11. Capital budgeting, evaluation of different methods
12. Liquidity vs profitability of a company. Ways of their evaluation
13. Continuous transportation systems in mining - advantages and disadvantages
14. Machinery systems applied in surface mining.
15. Machinery systems applied in underground mining

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

16. Proper maintenance of mining equipment and monitoring systems
17. Tunneling techniques for varying rock and soil materials.
18. Mining methods, equipment and basic requirements for underground mining.
19. Layout and design of underground mine; development and equipment requirements in soft and hard rocks.
20. Underground mining methods: longwall, shortwall, sublevel caving, block caving, sublevel stopping
21. Roof support, mine working support; different types and their application
22. Factors affecting climate conditions in mine excavations
23. Cooling processes in mines - air conditioning systems.
24. Rules of mines ventilation in terms of natural hazards.
25. Protecting people while underground fire.
26. Environmental management systems
27. Characteristics of hazards for the natural environment resulting from human activities
28. The basic structures of coal preparation and mining processing systems
29. Types and systematics of mineral processing operations.
30. Variogram and methods of its modelling
31. Kriging, its properties and types
32. Geophysical methods of exploration and identification of deposits.
33. Computer aided exploration and identification of deposits.
34. Decision models used in management.

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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)

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Approved by faculty student government legislative body:

POLITECHNIKA WROCLAWSKA
WYDZIAŁ GOS. GÓRNICZO-
GEOLOGICZNEGO
Katedra Geologii
Prof. dr hab. inż. Radosław Zimroz
Patrycja Haraj

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

.....
Date 21.10.2022

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

DZIEKAN
RZ
prof. dr hab. inż. Radosław Zimroz
(1)

.....
Date 21.10.2022

.....
Dean's signature

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: Mining Engineering

LANGUAGE OF STUDY: English

In effect since academic year 2022/23

sem./ hours	1	ECTS	2	ECTS	3	ECTS
1	Theory and Practice in Geomechanics 41000E W06GIG-SM0043G	6	Machinery Systems 20110E W06GIG-SM0072	6	Mineral Processing Systems 10020 E W06GIG-SM0067	3
2						
3					Environmental Management 20001Z W06GIG-SM0078	3
4						
5	Computer Aided Geological Modelling & Geostatistics 10300Z W06GIG-SM0038	5	Tunnel and Underground Excavation Design 20020E W06GIG-SM0073	5	Digital Mine 10100 Z W06GIG-SM0069	2
6						
7			Computer Aided Mine Design 10300 E W06GIG-SM0074	5	Operations Research 10100Z W06GIG-SM0079	3
8					Free Elective 20000 Z GIG-SM3111AN	2
9	Project Management, Appraisal and Risk Evaluation 10210E W06GIG-SM0039G	4	Foreign Language I 03000 Z SJO-SM0003BK	2	Diploma Seminar 00002Z W06GIG-SM0070S	2
10						
11			Foreign Language II 01000 Z SJO-SM0004BK	1	Master Thesis W06GIG-SM0071D	15
12						
13	Ventilation and Mine Fires 10020 E W06GIG-SM0075	4				
14						
15	Occupational Health and Safety 100100Z W06GIG-SM0042	2	Geochemistry 20000Z W06GIG-SM0076	2		
16						
17	Excavation Design in Open Pit Mining 20010E W06GIG-SM0068	5	Auto Cad 00200Z W06GIG-SM0077	2		
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
suma		30		30		30

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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 22

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/g roup 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	Concerni ng scientific activities ⁵	Practical ⁶	Type ⁷
1	W06GIG- SM0043G	Theory and Practice in Geomechanics	4	1				K2_GIG_W10,W14 K2_GIG_U04,U08, U10,U15	75	180	6	6	5	T/Z(w)	E		DN	P(2)	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(3)	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- 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
5	W06GIG- SM0068	Excavation Design in Open Pit Mining	2			1		K2_GIG_W07,W09,W10, W14,W18,W19 K2_GIG_U07,U10,U15 K2_GIG_K02	45	150	5	5	4	T /Z(w)	E, Z		DN	P(2)	K
Total			9	1	5	3	0		270	660	22	20	18					11	

Optional courses / groups of courses (8 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/gr oup 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	Concerni ng 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)	S
2	W06GIG- SM0041G	Integrated Analysis of Deformations in Geomechanical Engineering	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)	S
Total			3	0	2	1	0		90	240	8	8	6					5	

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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	1	7	4	0	360	900	30	28	24

Semester 2

Obligatory courses / groups of courses

Number of ECTS points 7

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/gr oup 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	Concerni ng scientific activities ⁵	Practical ⁶	Type ⁷
	W06GIG- SM0073	Tunnel and Underground Excavation Design	2			2		K2_GIG_W07,W09,W10, W14,W16,W18,W19 K2_GIG_U07,U10,U15 K2_GIG_K02	60	150	5	5	4	T/Z(w)	E, Z		DN	P(3)	K
	W06GIG- SM0076	Geochemistry	2					K2_GIG_W02,W10 K2_GIG_K03	30	60	2	2	2	T/Z(w)	Z		DN		PD
		Total	4	0	0	2	0		90	210	7	7	6					3	

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Optional courses / groups of courses (23 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/gr oup of courses	Way ³ of credi ng	Course/group of courses			
			lec	cl	lab	pr	sem		ZZ U	CNPS	Total	DN ⁵ classes	BU ¹ classes			Univer sity-wide ⁴	Concer ning scientific activities ⁵	Practical ⁶	Type ⁷
1	W06GIG-SM0072	Machinery Systems	2		1	1		K2_GIG_W07,W09,W18,W19 K2_GIG_U04,U07,U08,U10	60	180	6	6	5	T /Z(w)	E, Z		DN	P(4)	S
2	W06GIG-SM0074	Computer Aided Mine Design	1		3			K2_GIG_W06,W07,W11,W12,W15, W18 K2_GIG_U04,U07,U08,U14,U15 K2_GIG_K01	60	150	5	5	4	T /Z(w)	E, Z		DN	P(3)	S
3	W06GIG-SM0075	Ventilation and Mine Fires	1			2		K2_GIG_W07,W10,W13,W16 K2_GIG_U04,U07,U08,U14,U15 K2_GIG_K02	45	120	4	4	3	T /Z(w)	E, Z		DN	P(2)	S
4	SJO-SM0003BK	Foreign Language I		3				K2_GIG_U03	45	60	2		1	T	Z	O		P(2)	KO
5	SJO-SM0004BK	Foreign Language II		1				K2_GIG_U01,U02	15	30	1		0,5	T	Z	O		P(1)	KO
6	W06GIG-SM0077	Auto Cad			2			K2_GIG_U20	30	60	2		1,5	T	Z(l)			P(2)	KO
7	GIG-SM1111AN	Free elective	2					K2_GIG_W07 K2_GIG_K03	30	90	3		2	T	Z				S
Total			6	4	6	3	0		285	690	23	15	17					14	

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	6	5	0	375	900	30	22	23

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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 6

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/g roup 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	Concerni ng scientific activities ⁵	Practical ⁶	Type ⁷
1	W06GIG -SM0078	Environmental Management	2				1	K2_GIG_W04,W12,W13, W18 K2_GIG_U05,U10,U11 K2_GIG_K02,K03	45	90	3	3	2	T/Z(w)	Z		DN	P(1)	K
2	W06GIG -SM0079	Operations Research	1		1			K2_GIG_W06 K2_GIG_U10,U14 K2_GIG_K01	30	90	3	3	2	T/Z(w)	Z(w,l)		DN	P(1)	KO
Total			3	0	1	0	1		75	180	6	6	4					2	

Optional courses / groups of courses (24 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/gr oup of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN ⁵ classes	BU ¹ classes			Universit y-wide ⁴	Concernin g scientific activities ⁵	Practical ⁶	Type ⁷
1	W06GIG- SM0069	Mineral Processing Systems	1			2		K2_GIG_W07,W12,W18 K2_GIG_U04,U05,U07,U15	45	90	3	3	2	T/Z(w)	E, Z		DN	P(2)	S
2	W06GIG- SM0069	Digital Mine	1		1			K2_GIG_W07,W12,W18,W19 K2_GIG_U04,U07,U08	30	60	2	2	1	T/Z(w)	Z		DN	P(1)	S
3	GIG- S3111AN	Free Elective	2					K2_GIG_W07 K2_GIG_K03	30	60	2		2	T	Z				S
4	GIG- SM3111AN	Free Elective	2					K2_GIG_W07 K2_GIG_K03	30	60	2		2	T	Z				S
5	W06GIG- SM0070S	Diploma Seminar				2		K2_GIG_W01 K2_GIG_U01,U13 K2_GIG_K03	30	60	2	2	1	T	Z			P(2)	S
6	W06GIG- SM0071D	Master Thesis		1				K2_GIG_W01,W05,W10 K2_GIG_U01,U04,U08,U10,U13,U15 K2_GIG_K01,K03	15	450	15	15	5	T	Z			P(15)	S
Total			4	1	1	2	2		150	720	24	22	11					20	

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	1	2	2	3	225	900	30	28	15

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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-SM0043G	1. Theory and Practice in Geomechanics	1
W06GIG-SM0039G	2. Project Management, Appraisal and Risk Evaluation	1
W06GIG-SM0041G	3. Integrated Analysis of Deformations in Geomechanical Engineering	
W06GIG-SM0068	4. Excavation Design in Open Pit Mining	1
W06GIG-SM0072	1. Machinery Systems	2
W06GIG-SM0073	2. Tunnel and Underground Excavation Design	2
W06GIG-SM0074	3. Computer Aided Mine Design	2
W06GIG-SM0035	4. Ventilation and Mine Fires	2
W06GIG-SM0067	1. Mineral Processing Systems	3

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

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Opinion of student government legislative body

POCZTA POLSKA
Patrycja Haraj

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

.....
Date 21.10.2022

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

DZIEKAN
RZ

.....
prof. dr hab. inż. Radosław Zimroz

.....
Date 21.10.2022

.....
Dean's signature

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

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

LANGUAGE OF STUDY: English

SPECIALIZATION: **Geotechnical and Environmental Engineering**

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**

<i>1.1 Number of semesters: 3</i>	<i>1.2 Total number of ECTS points necessary to complete studies at a given level: 90</i>
<i>1.3 Total number of hours: 975</i>	<i>1.4 Prerequisites (particularly for second-level studies):</i> professional title of an engineer, interview
<i>1.5 Upon completion of studies graduate obtains</i> professional degree of: Master of Science	<i>1.6 Graduate profile, employability:</i> The graduate 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 geomechanics is required. The graduate will 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 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 Wrocław 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

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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) 55 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)~~

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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 BU¹ code) **58,5 ECTS**

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

Number of ECTS points for obligatory subjects	7
Number of ECTS points for optional subjects	0
Total number of ECTS points	7

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	14
Number of ECTS points for optional subjects	41
Total number of ECTS points	55

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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)

8 ECTS points

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

63 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

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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 (4 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/gr oup 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	Concerni ng 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
Total			1	0	2	1	0		60	120	4	4	3					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					
1	0	2	1	0	60	120	4	4	3

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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/gr oup 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	Concerni ng 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		

4.1.2.3 Chemistry 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/gr oup 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	Concerni ng scientific activities ⁵	Practical ⁶	Type ⁷
1	W07GIG -SM0051	Environmental Chemistry	2		1			K2_GIG_W02,W10 K2_GIG_U10 K2_GIG_K03	45	150	5	5	4	T	Z	O	DN	P(2)	PD
Total			2	0	1	0	0		45	150	5	5	4					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	2	0	0	75	210	7	5	6

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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/gr oup of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	Total	DN ⁵ classes	BU ¹ classes			Unive rsity- wide ⁴	Concerning scientific activities ⁵	Practical ⁶	Type ⁷
1	W06GIG- SM0038	Computer Aided Geological Modelling & Geostatistics (Part: 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- SM0068	Excavation Design in Open Pit Mining	2				1	K2_GIG_W07,W09,W10, W14,W18,W19 K2_GIG_U07,U10,U15 K2_GIG_K02	45	150	5	5	4	T/Z(w)	E, Z		DN	P(2)	K
3	W06GIG- SM0043 G	Theory and Practice in Geomechanics (GK)	4	1				K2_GIG_W10,W14 K2_GIG_U04,U08,U10,U15	75	180	6	6	5	T/Z(w)	E,Z		DN	P(2)	K
4	W06GIG- SM0042	Occupational Health and Safety	1				1	K2_GIG_W11,W12,W14,W1 7, K2_GIG_U11, K2_GIG_K02, K03	30	60	2	2	2	T/Z(w)	Z		DN	P(1)	K
Total			7	1	2	2	0		180	480	16	16	13					8	

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	1	2	2	0	180	480	16	16	13

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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

4.2.1.1 Liberal-managerial subjects blocks (2 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/g roup 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	Concerni ng scientific activities ⁵	Practical ⁶	Type ⁷
1	W06GIG- SM0074G	Numerical Methods and Optimisation (GK)	1				1	K2_GIG_W06 K2_GIG_U04,U14	30	60	2		1	T	Z			P (1)	KO
		Total	1	0	0	0	1		30	60	2		1					1	

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/gr oup 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	Concerni ng 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	

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

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	4	0	0	1	90	150	5	0	2,5

4.2.4 List of specialization blocks

4.2.4.1 Specialization subjects (e.g. whole specialization) blocks (41 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-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)	S
2	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)	S
3	W06GIG-SM0067	Mineral Processing Systems	1			2		K2_GIG_W07,W12,W18 K2_GIG_U04,U05,U07,U15	45	90	3	3	2	T/Z(w)	E, Z		DN	P(2)	S
4	W06GIG-SM0069	Digital Mine	1		1			K2_GIG_W07,W12,W18,W19 K2_GIG_U04,U07,U08	30	60	2	2	1	T/Z(w)	Z		DN	P(1)	S
5	GIG-SM3111AN	Free Elective	2					K2_GIG_W07 K2_GIG_K03	30	60	2		2	T	Z				S
6	W06GIG-SM0056	Methods of Environmental Assessment					2	K2_GIG_W05, W11,W13 K2_GIG_U05,U11,U12,U15	30	60	2		1	T	Z			P(2)	S
7	W06GIG-SM0057G	Waste Incineration and Air Quality Protection (GK)	2				1	K2_GIG_W05,W12 K2_GIG_U05,U07,U10	45	120	4		3	T/Z(w)	E			P(2)	S
8	W06GIG-SM0058G	Water and Wastewater Treatment (GK)	1				1	K2_GIG_W07,W12 K2_GIG_U05,U07,U10	30	60	2		1	T/Z(w)	Z			P(1)	S
9	W06GIG-SM0072G	Environmental Geotechnics (GK)	1				1	K2_GIG_W10,W12 K2_GIG_U05,U07,U10	30	60	2		1	T/Z(w)	Z			P(1)	S
10	W06GIG-SM0060G	Chemical Technologies in Environmental Protection (GK)	1				1	K2_GIG_W07,W12 K2_GIG_U05,U07	30	60	2		1	T/Z(w)	Z			P(1)	S
11	W06GIG-SM0061	Environmental Risk Assessment and Remediation	2					K2_GIG_W04,W11,W14 K2_GIG_U09	30	90	3		2	T/Z(w)	E				S

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

12	W06GIG-SM0073G	Soil and Water Chemistry (GK)	1		2			K2_GIG_W02,W10 K2_GIG_U05,08, U10	45	120	4		3	T/Z(w)	E			P(2)	S
13	W06GIG-SM0075G	Basics of Waste Management (GK)	2				1	K2_GIG_W04,W07,W12 K2_GIG_U05,U13	45	90	3		2	T/Z(w)	Z			P(1)	S
14	W06GIG-SM0066G	Environmental Geology (GK)	2				1	K2_GIG_W08,W10,W14 K2_GIG_U05,U10	45	120	4		3	T/Z(w)	E			P(2)	S
Total			19	0	5	3	8		525	1230	41	13	28					20	

4.2.4.2 Diploma (e.g. diploma profile) block (17 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/gr oup 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	Concerni ng 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	450	15	15	5	T	Z			DN	P(15)	S
Total			0	1	0	0	2		45	510	17	17	6						17	

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					
19	1	5	3	10	570	1740	58	30	34

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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
5	5	Z	
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	15	W06GIG-SM0054D	
Character of diploma dissertation			
Literature survey, project, computer program, etc.			
Number of BU ¹ ECTS points	5		

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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. Basic technologies of open pit exploitation
2. Machinery used in surface mining
3. Opening-up a surface mine. Development workings
4. Overburden stripping and dumping; Dumps; Dump slopes and their stability
5. In-situ stresses. Methods for stress analysis.
6. Rock mass discontinuities and their strength. Slope stability problems and rock fall hazard.
7. Floor strata behavior in room-and-pillar mining. Interaction of roof, pillar and floor.
8. Surface subsidence due to underground mining. Structures resistance against earthquake and mining related motion
9. Methods of deformation analysis: using the analysis of solid systems and mechanics.
10. Occupational risk assessment methods. Identification of harmful, dangerous and nuisance factors in the work environment.
11. Costs as the subject of cost accounting. Variable and fixed costs. Break even point.
12. Capital budgeting, evaluation of different methods
13. Liquidity vs profitability of a company. Ways of their evaluation
14. Basic elements and concepts of modern water and waste water purification technology and processes
15. Basic concepts of environmental geotechnics
16. The objects, methods and legal background of environmental geology
17. Definition and classification of soils.
18. Contamination of soils and remediation possibilities.

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

19. Chemical techniques on environmental pollution treatment, waste recycling and treatment, as well as on pollution control.
20. Environmental impact assessment. Impact Assessment. Monitoring
21. Characteristics of hazards for the natural environment resulting from human activities
22. The basic structures of coal preparation and mining processing systems
23. Types and systematics of mineral processing operations.
24. Variogram and methods of its modelling
25. Kriging, its properties and types
26. Geophysical methods of exploration and identification of deposits.
27. Computer aided exploration and identification of deposits.
28. Decision models used in management.

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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-SM0040	Engineering Geophysics	1-3
2	W06GIG-SM0042	Occupational Health and Safety	1-3
3	W06GIG-SM0038	Computer Aided Geological Modelling & Geostatistics	1-3
4	W06GIG-SM0039G	Project Management, Appraisal and Risk Evaluation (GK)	1-3
5	W06GIG-SM0043G	Theory and Practice in Geomechanics (GK)	1-3
6	W06GIG-SM0041G	Integrated Analysis of Deformations in Geomechanical Engineering	1-3
7	W07GIG-SM0051	Environmental Chemistry	1-3
8	W06GIG-SM0056	Methods of Environmental Assessment	2-3
9	W06GIG-SM0057G	Waste incineration and air quality protection (GK)	2-3
10	W06GIG-SM0058G	Water and Wastewater Treatment (GK)	2-3
11	W06GIG-SM0072G	Environmental Geotechnics (GK)	2-3
12	W06GIG-SM0060G	Chemical Technologies in Environmental Protection (GK)	2-3
13	W06GIG-SM0061	Environmental Risk Assessment and Remediation	2-3
14	W06GIG-SM0073G	Soil and Water Chemistry (GK)	2-3
15	W06GIG-SM0074G	Numerical Methods and Optimisation (GK)	2-3
16	W06GIG-SM0075G	Basics of Waste Management (GK)	2-3
17	W06GIG-SM0066G	Environmental Geology (GK)	2-3
18	SJO-SM0003BK	Foreign language (Język obcy)	2-3
19	SJO-SM0004BK	Foreign language (Język obcy)	3
20	W06GIG-SM0068	Excavation Design in Open Pit Mining	3
21	W06GIG-SM0067	Mineral Processing Systems	3
22	W06GIG-SM0069	Digital Mine	3
23	GIG-SM3111AN	Free elective (kurs wybieralny)	3
24	W06GIG-SM0070S	Diploma Seminar	3
25	W06GIG-SM0071D	Master Thesis	3

8. Plan of studies (attachment no. 4)

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Approved by faculty student government legislative body:

POLITECHNIKA WROCLAWSKA
WYDZIAŁ GOS. GÓRNICZO-
GEOLOGICZNEGO
Katedra Geologii
Prof. dr hab. inż. Radosław Zimroz
Patrycja Haraj

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

.....
Date 21.10.2022

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

DZIEKAN
RZ
prof. dr hab. inż. Radosław Zimroz
(1)

.....
Date 21.10.2022

.....
Dean's signature

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: Geotechnical and Environmental Engineering

LANGUAGE OF STUDY: English

In effect since academic year 2022/23

1. Plan of studies structure (optionally)

sem./ hours.	1	ECTS.	2	ECTS.	3	ECTS				
1	Theory and Practice in Geomechanics 41000E W06GIG-SM0043G	6	Methods of Environmental Assessment 00002Z W06GIG-SM0056	2	Mineral Processing Systems 10020 E W06GIG-SM0067	3				
2			Waste Incineration and Air Quality Protection 20001 E W06GIG-SM0057G	4			Excavation Design in Open Pit Mining 20010E W06GIG-SM0068	5		
3					Computer Aided Geological Modelling & Geostatistics 10300Z W06GIG-SM0038	5			Water and Wastewater Treatment 10001Z W06GIG-SM0058G	2
4							Environmental Geotechnics 10001Z W06GIG-SM0072G	2	Free Elective 20000 GIG-SM3111AN	2
5							Project Management, Appraisal and Risk Evaluation 10210E W06GIG-SM0039G	4	Chemical Technologies in Environmental Protection 10001Z W06GIG-SM0060G	2
6	Environmental Risk Assessment and Remediation 20000E W06GIG-SM0061	3	Foreign Language II 01000 Z SJO-SM0004BK	1						
7	Engineering Geophysics 10010 Z W06GIG-SM0040	3	Soil and Water Chemistry 10200E W06GIG-SM0073G	4	Master Thesis W06GIG-SM0071D	15				
8	Integrated Analysis of Deformations in Geomechanical Engineering 20200E W06GIG-SM0041G	5							Numerical Methods and Optimisation 10001Z W06GIG-SM0074G	2
9							Foreign language I 03000 Z SJO-SM0003BK	2		
10							Occupational Health and Safety 100100Z W06GIG-SM0042	2	Basics of Waste Management 20001Z W06GIG-SM0075G	3
11	Environmental Chemistry 20100Z W07GIG-SM0051	5					Environmental Geology 20001E W06GIG-SM0066G	4		
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
sum		30		30		30				

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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 22

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/g roup 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	Concerni ng scientific activities ⁵	Practical ⁶	Type ⁷
1	W06GIG- SM0043 G	Theory and Practice in Geomechanics	4	1				K2_GIG_W10,W14 K2_GIG_U04,U08, U10,U15	75	180	6	6	5	T/Z(w)	E		DN	P(2)	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	W07GIG- SM0051	Environmental Chemistry	2		1			K2_GIG_W02,W10 K2_GIG_U10 K2_GIG_K03	45	150	5	5	4	T/Z(w)	Z	O	DN	P(2)	PD
5	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			9	1	6	2	0		270	660	22	20	18					12	

Optional courses / groups of courses (8 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/gr oup 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	Concerni ng 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)	S
2	W06GIG- SM0041G	Integrated Analysis of Deformations in Geomechanical Engineering	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)	S
Total			3	0	2	1	0		90	240	8	8	6					5	

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	1	8	3	0	360	900	30	28	24

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

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/gr oup 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	Concerni ng scientific activities ⁵	Practical ⁶	Type ⁷
		Total																	

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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/gr oup of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZ U	CNPS	Total	DN ⁵ classes	BU ¹ classes			Univer sity-wide ⁴	Concerni ng scientific activities ⁵	Practical ⁶	Type ⁷
1	W06GIG- SM0057G	Waste incineration and air quality protection (GK)	2				1	K2_GIG_W05,W12 K2_GIG_U05,U07,U10	45	120	4		3	T/Z(w)	E			P(2)	S
2	W06GIG- SM0058G	Water and Wastewater Treatment (GK)	1				1	K2_GIG_W07,W12 K2_GIG_U05,U07,U10	30	60	2		1	T/Z(w)	Z			P(1)	S
3	W06GIG- SM0072G	Environmental Geotechnics (GK)	1				1	K2_GIG_W10,W12 K2_GIG_U05,U07,U10	30	60	2		1	T/Z(w)	Z			P(1)	S
4	W06GIG- SM0060G	Chemical Technologies in Environmental Protection (GK)	1				1	K2_GIG_W07,W12 K2_GIG_U05,U07	30	60	2		1	T/Z(w)	Z			P(1)	S
5	W06GIG- SM0061	Environmental Risk Assessment and Remediation	2					K2_GIG_W04,W11,W14 K2_GIG_U09	30	90	3		2	T/Z(w)	E				S
6	W06GIG- SM0073G	Soil and Water Chemistry (GK)	1		2			K2_GIG_W02,W10 K2_GIG_U05,08,U10	45	120	4		3	T/Z(w)	E			P(2)	S
7	W06GIG- SM75G	Basics of Waste Management (GK)	2				1	K2_GIG_W04,W07,W12 K2_GIG_U05,U13	45	90	3		2	T/Z(w)	Z			P(1)	S
8	W06GIG- SM0066G	Environmental Geology (GK)	2				1	K2_GIG_W08,W10,W14 K2_GIG_U05,U10	45	120	4		3	T/Z(w)	E			P(2)	S
9	W06GIG- SM0056	Methods of Environmental Assessment					2	K2_GIG_W05, W11,W13 K2_GIG_U05,U11,U12,U15	30	60	2		1	T/Z(w)	Z			P(2)	S
10	W06GIG- SM0074G	Numerical Methods and Optimisation (GK)	1				1	K2_GIG_W06 K2_GIG_U04,U14	30	60	2		1	T/Z(w)	Z			P(1)	KO
11	SJO- SM0003BK	Foreign Language I		3				K2_GIG_U03	45	60	2		1	T	Z	O		P(2)	KO
Total			13	3	2	0	9		405	900	30		19					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	3	2	0	9	405	900	30	0	19

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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/g roup 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	Concern ing scientific activities ⁵	Practical ⁶	Type ⁷
1	W06GIG- SM0068	Excavation Design in Open Pit Mining	2			1		K2_GIG_W07,W09,W10, W14,W18,W19 K2_GIG_U07,U10,U15 K2_GIG_K02	45	150	5	5	4	T/Z(w)	E, Z		DN	P (2)	K
Total			2	0	0	1	0		45	150	5	5	4					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/gr oup 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	Concern ing scientific activities ⁵	Practical ⁶	Type ⁷
1	W06GIG- SM0067	Mineral Processing Systems	1			2		K2_GIG_W07,W12,W18 K2_GIG_U04,U05,U07,U15	45	90	3	3	2	T/Z(w)	E, Z		DN	P(2)	S
2	W06GIG- SM0069	Digital Mine	1	1				K2_GIG_W07,W12,W18,W19 K2_GIG_U04,U07,U08	30	60	2	2	1	T/Z(w)	Z		DN	P(1)	S
3	GIG- S3111AN	Free Elective	2					K2_GIG_W07 K2_GIG_K03	30	60	2		2	T	Z				S
4	SJO- SM0004BK	Foreign Language II		1				K2_GIG_U01,U02	15	30	1		0,5	T	Z	O		P(1)	KO
5	W06GIG- SM0070S	Diploma Seminar				2		K2_GIG_W01 K2_GIG_U01,U13 K2_GIG_K03	30	60	2	2	1	T	Z			P(2)	S
6	W06GIG- SM0071D	Master Thesis		1				K2_GIG_W01,W05,W10 K2_GIG_U01,U04,U08,U10,U13, U15 K2_GIG_K01,K03	15	450	15	15	5	T	Z			P(15)	S
Total			4	2	1	2	2		165	750	25	22	11,5					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					
6	2	1	3	2	210	900	30	27	15,5

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – 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-SM0043G	1. Theory and Practice in Geomechanics	1
W06GIG-SM0039G	2. Project Management, Appraisal and Risk Evaluation	1
W06GIG-SM0041G	3. Integrated Analysis of Deformations in Geomechanical Engineering	1
W06GIG-SM0057G	4. Waste incineration and air quality protection	2
W06GIG-SM0061	5. Environmental Risk Assessment and Remediation	2
W06GIG-SM0073G	6. Soil and Water Chemistry	2
W06GIG-SM0066G	7. Environmental Geology	2
W06GIG-SM0067	1. Mineral Processing Systems	3
W06GIG-SM0068	2. Excavation Design in Open Pit Mining	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

¹BU – number of ECTS points assigned to hours of classes requiring direct participation of academic teachers and other persons conducting classes

²Traditional – enter T, remote – enter Z

³Exam – 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)

⁴University-wide course /group of courses – enter O

⁵DN - 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

⁶Practical course / group of courses – enter P. For the group of courses – in brackets enter the number of ECTS points assigned to practical courses

⁷KO – general education courses, PD – basic sciences courses, K – main field of study courses, S – specialization courses

Opinion of student government legislative body

.....
Date 21.10.2022

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

.....
Date 21.10.2022

.....
Dean's signature

.....
Date 21.10.2022

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

.....
Date 21.10.2022

.....
Dean's signature

POCZTA POLSKA

Patrycja Haraj

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

DZIEKAN
prof. dr hab. inż. Radosław Zimroz

Dean's signature