

**FACULTY: ENVIRONMENTAL ENGINEERING**  
**MAIN FIELD OF STUDY: ENVIRONMENTAL QUALITY MANAGEMENT**  
**FORM OF STUDIES: FULL-TIME STUDIES**

---

**Table of contents**

PROGRAM OF STUDIES .....	1
ASSUMED LEARNING OUTCOMES .....	2
DESCRIPTION OF THE PROGRAM OF STUDIES.....	6
PLAN OF STUDIES.....	20

## PROGRAM OF STUDIES

---

FACULTY:	<b>ENVIRONMENTAL ENGINEERING</b>
MAIN FIELD OF STUDY:	<b>ENVIRONMENTAL QUALITY MANAGEMENT</b>
DISCIPLINES:	<b>environmental engineering, mining and energetics</b>
EDUCATION LEVEL:	<b>second-level studies</b>
FORMA STUDIÓW:	<b>full-time studies</b>
PROFILE:	<b>general academic</b>
LANGUAGE OF STUDY:	<b>English</b>
IN EFFECTS SINCE ACADEMIC YEAR:	<b>2022/2023</b>

### Content:

1. Assumed learning outcomes – att. no 1 to program of studies
2. Description of the program of studies – att. no 2 to program of studies
3. Plan of studies – att. no 3 to program of studies

## ASSUMED LEARNING OUTCOMES

---

FACULTY: **ENVIRONMENTAL ENGINEERING**  
MAIN FIELD OF STUDY: **ENVIRONMENTAL QUALITY MANAGEMENT**  
EDUCATION LEVEL: **second-level studies**  
PROFILE: **general academic**

Location of the main field of study:

Branch of science: **technical and engineering sciences**  
Disciplines: **environmental engineering, mining and energetics**

Explanation of the markings:

P7U – universal first degree characteristics corresponding to education at the second-level studies - 7 PRK level

P7S – second degree characteristics corresponding to education at the second-level studies - 7 PRK level PRK

W – category „knowledge”

U – category „skills”

K – category „social competences”

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"

...\_inž – learning outcomes related to the engineer competences

Main field of study learning outcomes	Description of learning outcomes for the main-field-of study:	Reference to PRK characteristics		
	<b>ENVIRONMENTAL QUALITY MANAGEMENT</b>	Universal first degree characteristics (U)	Second degree characteristics typical for qualifications obtained in higher education (S)	
	<i>After the graduation graduate:</i>		Characteristics for qualifications on 7 level of PRK	Characteristics for qualifications on 7 level of PRK, enabling acquiring engineering competences
<b>KNOWLEDGE (W)</b>				
K2EQM_W01	<i>possesses expanded and broadened knowledge on a certain fields of mathematics, physics and chemistry including, i.a. statistics, technical physics, environmental chemistry essential for the description and analysis of measurement data</i>	P7U_W	P7S_WG	
K2EQM_W02	<i>possesses detailed knowledge on the construction law, technologies and organisation of works and spacial management</i>	P7U_W	P7S_WK	
K2EQM_W03	<i>knows and understands the social, economic and legal conditions of engineering activity and resulting responsibility. Is able to predict and consider the consequences of this activity to the environment, community and economy. Knows and understand the company aims in various organisational and legal forms. Recognizes the variety of functioning problems, also in the context of company surrounding</i>	P7U_W	P7S_WK	P7S_WK_inż
K2EQM_W04	<i>possesses the knowledge on the necessity to manage intellectual property resources</i>	P7U_W	P7S_WK	P7S_WK_inż
K2EQM_W05	<i>possesses basic knowledge on management, including quality management and running a business</i>	P7U_W	P7S_WK	P7S_WK_inż
K2EQM_W06	<i>possesses basic knowledge on the efficacy and methods of research as well as on assessing the reliability, safety and risk factors in the systems operation processes in environmental engineering</i>	P7U_W	P7S_WG	P7S_WG_inż
K2EQM_W07	<i>possesses expanded knowledge on key issues and ways of obtaining energy from alternative sources; is aware of the development trends concerning alternative energy sources, possesses basic knowledge on the lifecycle of devices and facilities connected with alternative energy sources</i>	P7U_W	P7S_WG	P7S_WG_inż
K2EQM_W08	<i>possesses knowledge on the development trends and latest achievements in technologies and organisation of installation and construction works</i>	P7U_W	P7S_WK	P7S_WK_inż
K2EQM_W09	<i>possesses systematic, supported by theory knowledge on assessing the quality of</i>	P7U_W	P7S_WG	P7S_WG_inż

	<i>natural waters as well as on advanced, modern, high performance technologies of water and sewage treatment</i>			
K2EQM_W10	<i>possesses expanded and broadened knowledge on mineral and organic resources, their processing and use, considering the by-produced waste</i>	P7U_W	P7S_WG	P7S_WG_inż
K2EQM_W11	<i>possesses systematic, supported by theory knowledge on the advanced, modern technologies of waste management</i>	P7U_W	P7S_WG	P7S_WG_inż
K2EQM_W12	<i>possesses detailed, supported by theory knowledge on hazards, especially of microbiological origin, and characteristics of anthropogenic pollution</i>	P7U_W	P7S_WG	
K2EQM_W13	<i>possesses systematic, supported by theory, detailed knowledge on the advanced, modern technologies of gas treatment</i>	P7U_W	P7S_WG	P7S_WG_inż
K2EQM_W14	<i>possesses supported by theory knowledge connected with selected issues on water supply and sewage systems</i>	P7U_W	P7S_WG	P7S_WG_inż
<b>SKILLS (U)</b>				
K2EQM_U01	<i>is able to describe collected statistic data, apply the methods of statistical inference in a reference to processes and phenomena in the field of environmental engineering</i>	P7U_U	P7S_UW	P7S_UW_inż
K2EQM_U02	<i>is able to use information and communication techniques, proper for developing control algorithms and programmable controllers (PLC) applied in environmental engineering field; uses analysis and simulation methods to solve a task; is able to rate the usefulness and the possibility to apply a device or a computer system in order to control the above processes</i>	P7U_U	P7S_UW	P7S_UW_inż
K2EQM_U03	<i>knows how to prepare a bill of quantities and investment cost estimate</i>	P7U_U	P7S_UW	P7S_UW_inż
K2EQM_U04	<i>understands foreign language texts concerning their field of studies e.g. business and technical document; is able to obtain necessary, foreign language information from different sources; possesses proper linguistic means to communicate effectively in professional environment</i>	P7U_U	P7S_UW P7S_UK P7S_UO	P7S_UW_inż
K2EQM_U05	<i>quite well comprehends the content and meaning of oral or written statement (in foreign language) concerning every day and professional life issues; is able to write a short text on familiar topic, including non-literary text; is able to participate in conversations which concern familiar topics and, to a limited extent, state opinions about their work and studies, with the use of socio cultural knowledge</i>	P7U_U	P7S_UW P7S_UK	
K2EQM_U06	<i>is able to obtain information from literature, data bases and other sources, on resources and waste management; is able to compile obtained information, interpret and critically evaluate it, draw conclusions, formulate and support opinions</i>	P7U_U	P7S_UW	P7S_UW_inż
K2EQM_U07	<i>with the use of standardised methods of analysis, is able to plan and conduct experiments, simple research activities on water and sewage treatment, as well as on waste management, with the consideration of biological aspects; is able to interpret</i>	P7U_U	P7S_UW	P7S_UW_inż

	<i>the results and draw conclusions</i>			
K2EQM_U08	<i>is able to apply information and communication techniques, essential to prepare compilations and projects</i>	P7U_U	P7S_UW	P7S_UW_inż
K2EQM_U09	<i>knows how to perform mass balances of processes and devices used for gas treatment, with the use of proper methods, techniques and instruments</i>	P7U_U	P7S_UW	P7S_UW_inż
K2EQM_U10	<i>knows how to plan and conduct simple computer simulations on water supply and sewage systems, interpret the results and draw conclusions</i>	P7U_U	P7S_UW	P7S_UW_inż
K2EQM_U11	<i>is able to present and comment on the results of their master's thesis, reason about the ways of achieving the given results; is able to indicate alternative solutions to the issue analysed</i>	P7U_U	P7S_UW P7S_UK P7S_UO	
K2EQM_U12	<i>is able to compose a master's thesis in the field of environmental engineering: is able to obtain information from native and foreign literature, data bases and other sources, compile, interpret and evaluate it, is able to use analytical, simulative and experimental methods to formulate and solve the problems, is capable of interdisciplinary compilation of knowledge, of adopting systematic approach considering also non- technological aspects, is able to assess the usefulness and possibilities of adopting modern technological achievements (techniques and technologies) in the presented discipline, is able to suggest procedures to upgrade/improve existing technological solutions, is able to interpret results of research, draw conclusions and formulate recommendations, is able to compose a master's thesis in accordance to the proper formal register</i>	P7U_U	P7S_UW P7S_UU	P7S_UW_inż
<b>SOCIAL COMPETENCES (K)</b>				
K2EQM_K01	<i>is ready to act and think in a creative and enterprising way, is able to set priorities in order to complete a given task</i>	P7U_K	P7S_KK	
K2EQM_K02	<i>is aware of the social effects of engineering activities on the environment and the liability for the decisions made</i>	P7U_K	P7S_KR	
K2EQM_K03	<i>understands the necessity of a lifetime learning process. Is able to perform critical analysis of own knowledge and receiving content</i>	P7U_K	P7S_KO	
K2EQM_K04	<i>by participation in a group motion activity is ready to cooperate with a team under specific regulations and fair play rules; is aware of civilization hazards and prevents these threats by initiating the actions in favour of public interest</i>	P7U_K	P7S_KO PS7_KR	

## DESCRIPTION OF THE PROGRAM OF STUDIES

Main field of study: <b>ENVIRONMENTAL QUALITY MANAGEMENT</b>	Profile: <b>GENERAL ACADEMIC</b>
Education level: <b>SECOND LEVEL STUDIES (MASTER'S DEGREE)</b>	Form of studies: <b>FULL-TIME STUDIES</b>

### 1 General description

1.1. <i>Number of semesters</i>  3	1.2. <i>Total number of ECTS points necessary to complete studies at a given level</i>  90
1.3. <i>Total number of hours</i>  1080	1.4. <i>Prerequisites (particularly for second-level studies)</i>  Diploma of the 1st level studies (minimum 7 semesters and 210 ECTS points) in: Environmental Engineering, Environmental Protection, Technologies for Environmental Protection or related. Each application is assessed individually on its merits. If in doubt, please contact the Admission Officer. English: TOEFL iBT minimum 87 points or IELTS – minimum 6.5 points.
1.5. <i>Upon completion of studies graduate obtains</i>  Master Engineer	1.6. <i>Graduate profile, employability:</i>  The EQM graduates ought to acquire deepen knowledge in mathematics and natural sciences, as well as in technical and engineering sciences. They ought to get specialist knowledge in environmental engineering. They ought to be prepared for solving problems in sustainable development and technology, involving indoor and outdoor environment. They should be able to play the role of the leader of the team and to organize and run research projects and scientific debates. The graduates should be able to deal with administrative and simple legal problems of companies. They ought to acquire the experience necessary for professional career at research units, industry and at universities or colleges. Job prospects: the graduate of EQM is able to design, maintain and operate the systems of air, water, wastewater treatment as well as waste management. He may work in a private sector, industry and governmental administration. The profile of the graduate is suitable for work at universities or in research and

	development institutions. The EQM graduate is aware of the necessity of lifelong learning process and development of professional skills. He is well prepared for a doctoral school.
<p><b>1.7. Possibility of continuing studies</b></p> <p>Eligibility to apply for admission to a doctoral school, non-degree postgraduate programmes</p>	<p><b>1.8. Indicate connection with University's mission and its development strategy</b></p> <p>The mission of our University and our Faculty is to shape the creative and critical personalities of students and define the directions of development in science and technology. The education offered at our institution is strongly linked with scientific research and the needs of economy and is consistent with standards of the European Higher Education Area. The offered obligatory and optional courses are in accordance with the Polish Qualifications Framework. The assumed learning effects involves recommendations of industry specialists, professional associations and international standards. In the course of educational process, besides the traditional knowledge transfer, self-directed learning practices are implemented. The degrees awarded by Wrocław University of Science and Technology and Faculty of Environmental Engineering are a symbol of high quality of education, confirmed by the Polish Accreditation Commission.</p>

## 2 Detailed description

### 2.1 Total number of learning outcomes in the program of study:

W (knowledge) =	14
U (skills) =	12
K (competences) =	4
W + U + K =	30

### 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):	30	This number must be greater than half the number of learning outcomes
D2:	-	
D3:	-	
D4:	-	

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

D1 (major):	100	% of ECTS points
D2:	-	% of ECTS points
D3:	-	% of ECTS points
D4:	-	% of ECTS points

**2.4 a) For the general academic profile 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 faculty is assigned**

ECTS (DN):	57	(must be greater than 50% of the total number of ECTS points from 1.2)
------------	----	--

**b) For the practical profile field of study - the number of ECTS points assigned to the classes shaping practical skills**

ECTS (P):	n/d	(must be greater than 50% of the total number of ECTS points from 1.2)
-----------	-----	--

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

The needs of the labour market in matters of environmental engineering haven been described in the present Description of the Program of Studies (in 1.6 Graduate profile, employability). The graduate of the Environmental Quality Management field of study has a considerable knowledge on environmental engineering and environmental protection. He is prepared for solving problems on sustainable development and renewable energy resources, planning, exploitation and conducting research projects in the following areas: processes, technologies and systems of water and wastewater treatment, as well as air protection and waste management; monitoring and evaluation environmental contamination. He is also prepared to use software in modelling and designing of sanitary infrastructure. The graduate of the Environmental Quality Management field of study (EQM), due to acquired knowledge and practical skills, meets the present needs of national and international labour market, especially as an employee highly-educated in problems of sustainable development.

**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 (the sum of ECTS points for courses / groups of courses marked with the BU 1a code) 46.7 ECTS**

ECTS (BU):	49.8	(enter the sum of ECTS credits for the courses / groups of courses coded BU <sup>1</sup> , while for the full-time studies this number must be higher than 50% of the total number of ECTS credits from point 1.2)
------------	------	--

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

Number of ECTS points for obligatory subjects	8
Number of ECTS points for optional subjects	0
Total number of ECTS points	8

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

Number of ECTS points for obligatory subjects	16
Number of ECTS points for optional subjects	26
Total number of ECTS points	42

**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)**

ECTS (O):	18	(enter number of ECTS points for courses/groups of courses denoted with code O)
-----------	----	---

**2.10 Total number of ECTS points, which student may obtain doing optional blocks:**

ECTS:	28	(min. 30% of total number of ECTS points)
-------	----	---

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

The duration of the full-time study period, second level (seven level of PRK) in Environmental Quality Management field of study (EQM) is 3 semesters. The required number of ECTS credits to achieve a full qualification is 90. The classes organized directly at the University (ZZU) cover 1080 h. The programme of studies involves: general education and university-wide courses, as well as basic sciences, field-of-studies, and specialization courses. The optional courses are also offered to students. The courses are delivered as lectures, exercises, laboratories, projects, and seminars. The verification of student practical achievements (the practical assumed learning effects) is made by short tests, colloquies, projects, reports, communications, oral presentations, and discussions. The student engagement and the ability to cooperate in a student group is also evaluated. The verification of theoretical knowledge is made through colloquies, and written or oral exams. In order to receive the Master's degree, the graduate is required to write a Master's thesis and pass the diploma exam. The diploma exam can be taken by student after completing the programme of studies and involves verification of learning effects referring to the following courses: Water treatment technology, Wastewater treatment technology, Water supply systems, Sewage systems, Waste management, Sanitary biology, Environmental health hazards, Air pollutants and their sources.

#### 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

*min. 5 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 <sup>2</sup> of course / group of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			Le	Cl	La	Pr	Se		ZZU	CNPS	total	DN classes <sup>5</sup>	BU classes <sup>1</sup>			University-wide <sup>4</sup>	rel. to scient. act. <sup>5</sup>	practical <sup>6</sup>	type <sup>7</sup>
1	n/d	Ethics of new and emerging technologies	1					K2EQM_W03, K2EQM_W04, K2EQM_K02	15	60	2		0.8	T/Z	Z	O			KO
2	n/d	Strategic management	2					K2EQM_W03, K2EQM_W05	30	90	3		1.3	T/Z	Z	O			KO
Total			3	0	0	0	0		45	150	5	0	2.1						

##### Altogether for general education blocks:

Łączna liczba godzin					Łączna liczba godzin ZZU	Łączna liczba godzin CNPS	Łączna liczba punktów ECTS	Łączna liczba punktów ECTS zajęć DN <sup>5</sup>	Liczba punktów ECTS zajęć BU <sup>1</sup>
Le	Cl	La	Pr	Se	h	h	Points	Points	Points
3	0	0	0	0	45	150	5	0	2.1

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct contact (attendance) of teachers with students

<sup>2</sup>Traditional – T, remote – Z

<sup>3</sup>Exam – E, crediting – Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)

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

<sup>5</sup>Course/ group of courses related to scientific activity – DN

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

<sup>7</sup>Optional – enter W, obligatory – enter Ob

#### 4.1.2 List of basic sciences blocks

##### 4.1.2.1 Mathematics 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 <sup>2</sup> of course / group of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			Le	Cl	La	Pr	Se		ZZU	CNPS	total	DN classes <sup>5</sup>	BU classes <sup>1</sup>			University-wide <sup>4</sup>	rel. to scient. act. <sup>5</sup>	practical <sup>6</sup>	type <sup>7</sup>
1	n/d	Engineering applications of mathematical statistics	1					K2EQM_W01	15	60	2		0.8	T/Z	Z	0			PD
2	n/d	Engineering applications of mathematical statistics		1				K2EQM_U01, K2EQM_K01	15	30	1		0.8	T/Z	Z	0		P	PD
Total			1	1	0	0	0		30	90	3	0	1.6						

##### 4.1.2.2 Chemistry block

**min. 5 ECTS point**

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 <sup>2</sup> of course / group of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			Le	Cl	La	Pr	Se		ZZU	CNPS	total	DN classes <sup>5</sup>	BU classes <sup>1</sup>			University-wide <sup>4</sup>	rel. to scient. act. <sup>5</sup>	practical <sup>6</sup>	type <sup>7</sup>
1	n/d	Environmental chemistry	2					K2EQM_W01, K2EQM_W09, K2EQM_K02	30	90	3		1.3	T/Z	Z	0			PD
2	n/d	Environmental chemistry			1			K2EQM_U07, K2EQM_U09	15	60	2		0.8	T	Z	0		P	PD
Total			2	0	1	0	0		45	150	5	0	2.1						

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct contact (attendance) of teachers with students

<sup>2</sup>Traditional – T, remote – Z

<sup>3</sup>Exam – E, crediting – Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)

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

<sup>5</sup>Course/ group of courses related to scientific activity – DN

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

<sup>7</sup>Optional – enter W, obligatory – enter Ob

**Altogether for basic sciences blocks:**

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number ECTS points	Number of ECTS points for DN <sup>5</sup> classes	Number of ECTS points for BU <sup>1</sup> classes
Le	Cl	La	Pr	Se	h	h	Points	Points	Points
3	1	1	0	0	75	240	8	0	3.7

**4.1.3 List of main-field-of-study blocks**

**4.1.3.1 Obligatory main-field-of-study blocks**

**min. 49 ECTS point**

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 <sup>2</sup> of course / group of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			Le	Cl	La	Pr	Se		ZZU	CNPS	total	DN classes <sup>5</sup>	BU classes <sup>1</sup>			University-wide <sup>4</sup>	rel. to scien. act. <sup>5</sup>	practical <sup>6</sup>	type <sup>7</sup>
1	n/d	Automation in environmental engineering			1			K2EQM_U02	15	60	2		0.8	T	Z			P	K
2	n/d	Water quality management	2					K2EQM_W09	30	90	3	3	1.3	T/Z	E		DN		K
3	n/d	Raw materials management	1					K2EQM_W10, K2EQM_W12, K2EQM_K02	15	30	1	1	0.8	T/Z	Z		DN		K
4	n/d	Raw materials management				1		K2EQM_U06, K2EQM_K02, K2EQM_K03	15	30	1	1	0.8	T/Z	Z		DN	P	K
5	n/d	Water treatment technology	2					K2EQM_W09	30	60	2	2	1.3	T/Z	E		DN		K
6	n/d	Water treatment technology			1			K2EQM_U07, K2EQM_K01	15	30	1	1	0.8	T	Z		DN	P	K
7	n/d	Sanitary biology	1					K2EQM_W12, K2EQM_K02	15	30	1	1	0.8	T/Z	E		DN		K
8	n/d	Sanitary biology			1			K2EQM_U07, K2EQM_K02	15	30	1	1	0.8	T	Z		DN	P	K
9	n/d	AutoCad			1			K2EQM_U08, K2EQM_K03	15	30	1		0.8	T	Z			P	K

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct contact (attendance) of teachers with students

<sup>2</sup>Traditional – T, remote – Z

<sup>3</sup>Exam – E, crediting – Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)

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

<sup>5</sup>Course/ group of courses related to scientific activity – DN

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

<sup>7</sup>Optional – enter W, obligatory – enter Ob

10	n/d	Water supply systems	1					K2EQM_W14, K2EQM_K02	15	30	1	1	0.8	T/Z	Z		DN		K
11	n/d	Water supply systems			1			K2EQM_U02, K2EQM_U05, K2EQM_U10, K2EQM_K02, K2EQM_K04	15	30	1	1	1	T	Z		DN	P	K
12	n/d	Environmental management	2					K2EQM_W03, K2EQM_K02	30	90	3		1.3	T/Z	Z				K
13	n/d	Spatial planning	1					K2EQM_W02, K2EQM_K01, K2EQM_K02	15	60	2		0.8	T/Z	Z	O			KO
14	n/d	Reliability of engineering systems	1					K2EQM_W06	15	60	2	2	0.8	T/Z	Z		DN		K
15	n/d	Biodegradable materials	2					K2EQM_W10, K2EQM_K03	30	60	2	2	1.3	T/Z	Z		DN		K
16	n/d	Wastewater treatment technology	2					K2EQM_W09	30	60	2	2	1.3	T/Z	Z		DN		K
17	n/d	Wastewater treatment technology			1			K2EQM_U07, K2EQM_K01	15	30	1	1	0.8	T	Z		DN	P	K
18	n/d	Solid waste management	2					K2EQM_W11	30	60	2	2	1.3	T/Z	E		DN		K
19	n/d	Solid waste management			1			K2EQM_U07, K2EQM_U09, K2EQM_K02	15	30	1	1	0.8	T	Z		DN	P	K
20	n/d	Waste gases purification	2					K2EQM_W13	30	60	2	2	1.3	T/Z	E		DN		K
21	n/d	Waste gases purification		1				K2EQM_U09, K2EQM_K01	15	30	1	1	0.8	T/Z	Z		DN	P	K
22	n/d	Environmental toxicology	1					K2EQM_W12, K2EQM_K02	15	30	1	1	0.8	T/Z	Z		DN		K
23	n/d	Environmental toxicology			1			K2EQM_U07, K2EQM_K02	15	30	1	1	0.8	T	Z		DN	P	K
24	n/d	Environmental health hazards	2					K2EQM_W12	30	60	2	2	1.3	T/Z	Z		DN		K
25	n/d	Sewage systems	1					K2EQM_W14, K2EQM_K02	15	60	2	2	0.8	T/Z	Z		DN		K
26	n/d	Sewage systems				1		K2EQM_U02, K2EQM_U05, K2EQM_U08,	15	30	1	1	1	T	Z		DN	P	K

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct contact (attendance) of teachers with students

<sup>2</sup>Traditional – T, remote – Z

<sup>3</sup>Exam – E, crediting – Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)

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

<sup>5</sup>Course/ group of courses related to scientific activity – DN

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

<sup>7</sup>Optional – enter W, obligatory – enter Ob

								K2EQM_U10, K2EQM_K02, K2EQM_K04											
27	n/d	Membrane separation processes in environmental protection	1					K2EQM_W09	15	60	2	2	0.8	T/Z	Z		DN		K
28	n/d	Membrane separation processes in environmental protection			1			K2EQM_U07, K2EQM_K01	15	30	1	1	0.8	T	Z		DN	P	K
29	n/d	Organization of construction works	1					K2EQM_W08, K2EQM_W09	15	60	2		0.8	T/Z	Z				K
30	n/d	Buildings regulations	2					K2EQM_W02	30	60	2		1.3	T/Z	Z				K
31	n/d	Renewable energy systems	1					K2EQM_W07	15	60	2	2	0.8	T/Z	Z		DN		K
Total			28	1	8	2	1		600	1470	49	37	29.7						

**Altogether (for main-field-of-study blocks):**

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number ECTS points	Number of ECTS points for DN <sup>5</sup> classes	Number of ECTS points for BU <sup>1</sup> classes
Le	Cl	La	Pr	Se	h	h	Points	Points	Points
28	1	8	2	1	600	1470	49	37	29.7

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct contact (attendance) of teachers with students

<sup>2</sup>Traditional – T, remote – Z

<sup>3</sup>Exam – E, crediting – Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)

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

<sup>5</sup>Course/ group of courses related to scientific activity – DN

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

<sup>7</sup>Optional – enter W, obligatory – enter Ob

## 4.2 List of optional blocks

### 4.2.1 List of general education blocks

#### 4.2.1.1 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 <sup>2</sup> of course / group of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			Le	Cl	La	Pr	Se		ZZU	CNPS	total	DN classes <sup>5</sup>	BU classes <sup>1</sup>			Unive rsity-wide <sup>4</sup>	rel. to scien. act. <sup>5</sup>	practi cal. <sup>6</sup>	type <sup>7</sup>
1	n/d	Foreign language I		1				K2EQM_U05	15	30	1		0.8	T/Z	Z	O		P	KO
2	n/d	Foreign language II		3				K2EQM_U04	45	60	2		1.8	T/Z	Z	O		P	KO
<b>Total</b>			<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>60</b>	<b>90</b>	<b>3</b>	<b>0</b>	<b>2.6</b>						

#### Altogether for general education blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number ECTS points	Number of ECTS points for DN <sup>5</sup> classes	Number of ECTS points for BU <sup>1</sup> classes
Le	Cl	La	Pr	Se	h	h	Points	Points	Points
0	4	0	0	0	60	90	3	0	2.6

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct contact (attendance) of teachers with students

<sup>2</sup>Traditional – T, remote – Z

<sup>3</sup>Exam – E, crediting – Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)

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

<sup>5</sup>Course/ group of courses related to scientific activity – DN

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

<sup>7</sup>Optional – enter W, obligatory – enter Ob

## 4.2.2 List of main-field-of-study blocks

### 4.2.2.1 Optional courses block 1

**min. 1 pkt. ECTS (choice of 1 courses)**

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 <sup>2</sup> of course / group of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			Le	Cl	La	Pr	Se		ZZU	CNPS	total	DN classes <sup>5</sup>	BU classes <sup>1</sup>			University-wide <sup>4</sup>	rel. to scien. act. <sup>5</sup>	practical. <sup>6</sup>	type <sup>7</sup>
1	n/d	Biomonitoring	1					-	15	30	1		0.8	T/Z	Z				K
2	n/d	Methods and techniques of air pollutants measurement	1					-	15	30	1		0.8	T/Z	Z				K
Total			1	0	0	0	0		15	30	1	0	0.8						

### 4.2.2.2 Optional courses block 2

**min. 2 pkt. ECTS (choice of 1 courses)**

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 <sup>2</sup> of course / group of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			Le	Cl	La	Pr	Se		ZZU	CNPS	total	DN classes <sup>5</sup>	BU classes <sup>1</sup>			University-wide <sup>4</sup>	rel. to scien. act. <sup>5</sup>	practical. <sup>6</sup>	type <sup>7</sup>
1	n/d	Air pollutants and their sources	1					-	15	30	1		0.8	T/Z	Z				K
2	n/d	Air pollutants and their sources			1			-	15	30	1		0.8	T	Z			P	K
3	n/d	Modeling of water and sewage treatment processes	1					-	15	30	1		0.8	T/Z	Z				K
4	n/d	Modeling of water and sewage treatment processes			1			-	15	30	1		0.8	T	Z			P	K
Total			1	0	1	0	0		30	60	2	0	1.6						

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct contact (attendance) of teachers with students

<sup>2</sup>Traditional – T, remote – Z

<sup>3</sup>Exam – E, crediting – Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)

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

<sup>5</sup>Course/ group of courses related to scientific activity – DN

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

<sup>7</sup>Optional – enter W, obligatory – enter Ob

**Altogether for main-field of study blocks:**

łączna liczba godzin					Total number of ZZU hours	Total number of CNPS hours	Total number ECTS points	Number of ECTS points for DN <sup>5</sup> classes	Number of ECTS points for BU <sup>1</sup> classes
Le	Cl	La	Pr	Se	h	h	Points	Points	Points
2	0	1	0	0	45	90	3	0	2.4

**4.2.2.3 Diploma project (master thesis) block**

**min. 22 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 <sup>2</sup> of course / group of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			Le	Cl	La	Pr	Se		ZZU	CNPS	total	DN classes <sup>5</sup>	BU classes <sup>1</sup>			Unive-rsity-wide <sup>4</sup>	rel. to scien. act. <sup>5</sup>	practi-cal. <sup>6</sup>	type <sup>7</sup>
1	n/d	Diploma seminar					2	K2EQM_U06, K2EQM_U11	30	60	2		1.3	T/Z	Z		0	P	K
2	n/d	Diploma project (master thesis)				15		K2EQM_U06, K2EQM_U12	225	600	20	20	8	T	Z		DN	P	K
Total			0	0	0	15	2		255	660	22	20	9.3						

**Altogether for Diploma project (master thesis) block blocks:**

łączna liczba godzin					Total number of ZZU hours	Total number of CNPS hours	Total number ECTS points	Number of ECTS points for DN <sup>5</sup> classes	Number of ECTS points for BU <sup>1</sup> classes
Le	Cl	La	Pr	Se	h	h	Points	Points	Points
0	0	0	15	2	255	660	22	20	9.3

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct contact (attendance) of teachers with students

<sup>2</sup>Traditional – T, remote – Z

<sup>3</sup>Exam – E, crediting – Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)

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

<sup>5</sup>Course/ group of courses related to scientific activity – DN

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

<sup>7</sup>Optional – enter W, obligatory – enter Ob

#### 4.3 Practises block

Not applicable

#### 4.4 „Diploma dissertation“ block

Type of diploma dissertation	Master Thesis
Number of diploma dissertation semesters:	1
Number of ECTS points:	20
Code:	N/D
Character of diploma dissertation:	Master Thesis (literature survey and/or project and/or computer program and/or assessment-diagnosis) Master thesis should include computational, investigational or experimental solution of the posted scientific or technical problem using the knowledge acquired during the second degree studies. The thesis should include: 1) definition of thesis problem, 2) an extension of the problem, 3) method of particular solutions, 4) the use of appropriate analytical tools, 5) formulation of research proposals on the basis of analysis, 6) deposition of the research problem in broadly citing literature review.
Number of ECTS BU <sup>1</sup>	8
Number of ECTS DN <sup>5</sup>	20

#### 5 Ways of verifying assumed learning outcomes

Type of classes:	Ways of verifying assumed learning outcomes:
lecture	exam, test
class	test, colloquium, participation in the discussion of problems, activity
laboratory	test, entrance test, lab report
project	project defence
seminar	participation in discussion, presentation of the topic, the essay
training	practice report
diploma dissertation	thesis preparation

**6 Range of diploma examination**

Questions related to water and wastewater treatment.

Questions related to water supply and sewage systems.

Questions related to solid waste management.

Questions related to sanitary biology and environmental health hazards.

Questions related to air pollutants and their sources.

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

Each course should be credited in a semester in which it is offered.

**7 Plan of studies (attachment no. 3)**

Approved by faculty student government legislative body:

---

Date

---

name and surname, signature of student representative

---

Date

---

Dean's signature

## PLAN OF STUDIES

---

FACULTY:	<b>ENVIRONMENTAL ENGINEERING</b>
MAIN FIELD OF STUDY:	<b>ENVIRONMENTAL QUALITY MANAGEMENT</b>
EDUCATION LEVEL:	<b>second-level studies</b>
FORM OF STUDIES:	<b>full-time studies</b>
PROFILE:	<b>general academic</b>
LANGUAGE OF STUDY:	<b>English</b>
IN EFFECTS SINCE ACADEMIC YEAR:	<b>2022/2023</b>

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

### Semester 1

#### Obligatory courses/groups of courses

*number of ECTS 28 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 <sup>2</sup> of course / group of courses cl cl	Way <sup>3</sup> of crediting lab lab	Course/group of courses			
			Le	Cl	La	Pr	Se		ZZU	CNPS	total	DN classes <sup>5</sup>	BU classes <sup>1</sup>			Unive-rsity-wide <sup>4</sup>	rel. to scien. act. <sup>5</sup>	practi-cal. <sup>6</sup>	type <sup>7</sup>
1	n/d	Ethics of new and emerging technologies	1					K2EQM_W03, K2EQM_W04, K2EQM_K02	15	60	2		0.8	T/Z	Z	O	0		KO
2	n/d	Strategic management	2					K2EQM_W03, K2EQM_W05	30	90	3		1.3	T/Z	Z	O	0		KO
3	n/d	Engineering applications of mathematical statistics	1					K2EQM_W01	15	60	2		0.8	T/Z	Z	0	0		PD
4	n/d	Engineering applications of mathematical statistics		1				K2EQM_U01, K2EQM_K01	15	30	1		0.8	T/Z	Z	0	0	P	PD
5	n/d	Environmental chemistry	2					K2EQM_W01, K2EQM_W09, K2EQM_K02	30	90	3		1.3	T/Z	Z	0	0		PD
6	n/d	Environmental chemistry			1			K2EQM_U07, K2EQM_U09	15	60	2		0.8	T	Z	0	0	P	PD
7	n/d	Automation in environmental engineering			1			K2EQM_U02	15	60	2		0.8	T	Z		0	P	K
8	n/d	Water quality management	2					K2EQM_W09	30	90	3	3	1.3	T/Z	E		DN		K
9	n/d	Raw materials management	1					K2EQM_W10, K2EQM_W12, K2EQM_K02	15	30	1	1	0.8	T/Z	Z		DN		K
10	n/d	Raw materials management					1	K2EQM_U06, K2EQM_K02, K2EQM_K03	15	30	1	1	0.8	T/Z	Z		DN	P	K
11	n/d	Water treatment technology	2					K2EQM_W09	30	60	2	2	1.3	T/Z	E		DN		K

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct contact (attendance) of teachers with students

<sup>2</sup>Traditional – T, remote – Z

<sup>3</sup>Exam – E, crediting – Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)

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

<sup>5</sup>Course/ group of courses related to scientific activity – DN

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

<sup>7</sup>Optional – enter W, obligatory – enter Ob

12	n/d	Water treatment technology			1			K2EQM_U07, K2EQM_K01	15	30	1	1	0.8	T	Z		DN	P	K
13	n/d	Sanitary biology	1					K2EQM_W12, K2EQM_K02	15	30	1	1	0.8	T/Z	E		DN		K
14	n/d	Sanitary biology			1			K2EQM_U07, K2EQM_K02	15	30	1	1	0.8	T	Z		DN	P	K
15	n/d	AutoCad			1			K2EQM_U08, K2EQM_K03	15	30	1		0.8	T	Z		O	P	K
16	n/d	Water supply systems	1					K2EQM_W14, K2EQM_K02	15	30	1	1	0.8	T/Z	Z		DN		K
17	n/d	Water supply systems				1		K2EQM_U02, K2EQM_U05, K2EQM_U10, K2EQM_K02, K2EQM_K04	15	30	1	1	1	T	Z		DN	P	K
Total			13	1	5	1	1		315	840	28	12	15.8						

**Optional courses/group of courses (foreign language)**

**number of ECTS points 1**

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 <sup>2</sup> of course / group of courses cl cl	Way <sup>3</sup> of crediting lab lab	Course/group of courses			
			Le	Cl	La	Pr	Se		ZZU	CNPS	total	DN classes <sup>5</sup>	BU classes <sup>1</sup>			Unive rsity-wide <sup>4</sup>	rel. to scien. act. <sup>5</sup>	practi cal. <sup>6</sup>	type <sup>7</sup>
1	n/d	Foreign language I		1				K2EQM_U05	15	30	1		0.8	T/Z	Z	O	0	P	KO
Total			0	1	0	0	0		15	30	1	0	0.8						

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct contact (attendance) of teachers with students

<sup>2</sup>Traditional – T, remote – Z

<sup>3</sup>Exam – E, crediting – Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)

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

<sup>5</sup>Course/ group of courses related to scientific activity – DN

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

<sup>7</sup>Optional – enter W, obligatory – enter Ob

**Optional courses (block 1 - choice of 1 courses)**

**number of ECTS points 1**

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 <sup>2</sup> of course / group of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			Le	Cl	La	Pr	Se		ZZU	CNPS	total	DN classes <sup>5</sup>	BU classes <sup>1</sup>			University-wide <sup>4</sup>	rel. to scien. act. <sup>5</sup>	practical <sup>6</sup>	type <sup>7</sup>
1	n/d	Biomonitoring	1					-	15	30	1		0.8	T/Z	Z		0		K
2	n/d	Methods and techniques of air pollutants measurement	1					-	15	30	1		0.8	T/Z	Z		0		K
Total			1	0	0	0	0		15	30	1	0	0.8						

**Altogether in semester:**

łączna liczba godzin					Total number of ZZU hours	Total number of CNPS hours	Total number ECTS points	Number of ECTS points for DN <sup>5</sup> classes	Number of ECTS points for BU <sup>1</sup> classes
Le	Cl	La	Pr	Se	Points	h	Points	Points	Points
14	2	5	1	1	345	900	30	12	17.4

**Semester 2**

**Obligatory courses/groups of courses**

**number of ECTS 28 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 <sup>2</sup> of course / group of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			Le	Cl	La	Pr	Se		ZZU	CNPS	total	DN classes <sup>5</sup>	BU classes <sup>1</sup>			University-wide <sup>4</sup>	rel. to scien. act. <sup>5</sup>	practical <sup>6</sup>	type <sup>7</sup>
1	n/d	Environmental management	2					K2EQM_W03, K2EQM_K02	30	90	3		1.3	T/Z	Z		0		K
2	n/d	Spatial planning	1					K2EQM_W02, K2EQM_K01, K2EQM_K02	15	60	2		0.8	T/Z	Z	O	0		KO
3	n/d	Reliability of engineering systems	1					K2EQM_W06	15	60	2	2	0.8	T/Z	Z		DN		K
4	n/d	Biodegradable materials	2					K2EQM_W10, K2EQM_K03	30	60	2	2	1.3	T/Z	Z		DN		K

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct contact (attendance) of teachers with students

<sup>2</sup>Traditional – T, remote – Z

<sup>3</sup>Exam – E, crediting – Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)

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

<sup>5</sup>Course/ group of courses related to scientific activity – DN

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

<sup>7</sup>Optional – enter W, obligatory – enter Ob

5	n/d	Wastewater treatment technology	2					K2EQM_W09	30	60	2	2	1.3	T/Z	Z		DN		K
6	n/d	Wastewater treatment technology			1			K2EQM_U07, K2EQM_K01	15	30	1	1	0.8	T	Z		DN	P	K
7	n/d	Solid waste management	2					K2EQM_W11	30	60	2	2	1.3	T/Z	E		DN		K
8	n/d	Solid waste management			1			K2EQM_U07, K2EQM_U09, K2EQM_K02	15	30	1	1	0.8	T	Z		DN	P	K
9	n/d	Waste gases purification	2					K2EQM_W13	30	60	2	2	1.3	T/Z	E		DN		K
10	n/d	Waste gases purification		1				K2EQM_U09, K2EQM_K01	15	30	1	1	0.8	T/Z	Z		DN	P	K
11	n/d	Environmental toxicology	1					K2EQM_W12, K2EQM_K02	15	30	1	1	0.8	T/Z	Z		DN		K
12	n/d	Environmental toxicology			1			K2EQM_U07, K2EQM_K02	15	30	1	1	0.8	T	Z		DN	P	K
13	n/d	Environmental health hazards	2					K2EQM_W12	30	60	2	2	1.3	T/Z	Z		DN		K
14	n/d	Sewage systems	1					K2EQM_W14, K2EQM_K02	15	60	2	2	0.8	T/Z	Z		DN		K
15	n/d	Sewage systems				1		K2EQM_U02, K2EQM_U05, K2EQM_U08, K2EQM_U10, K2EQM_K02, K2EQM_K04	15	30	1	1	1	T	Z		DN	P	K
16	n/d	Membrane separation processes in environmental protection	1					K2EQM_W09	15	60	2	2	0.8	T/Z	Z		DN		K
17	n/d	Membrane separation processes in environmental protection			1			K2EQM_U07, K2EQM_K01	15	30	1	1	0.8	T	Z		DN	P	K
Total			17	1	4	1	0		345	840	28	23	16.8						

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct contact (attendance) of teachers with students

<sup>2</sup>Traditional – T, remote – Z

<sup>3</sup>Exam – E, crediting – Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)

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

<sup>5</sup>Course/ group of courses related to scientific activity – DN

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

<sup>7</sup>Optional – enter W, obligatory – enter Ob

**Optional courses/group of courses (foreign language)**

**number of ECTS 2 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 <sup>2</sup> of course / group of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			Le	Cl	La	Pr	Se		ZZU	CNPS	total	DN classes <sup>5</sup>	BU classes <sup>1</sup>			University-wide <sup>4</sup>	rel. to scien. act. <sup>5</sup>	practical <sup>6</sup>	type <sup>7</sup>
1	n/d	Foreign language II		3				K2EQM_U04	45	60	2		1.8	T/Z	Z	O	0	P	KO
		Total	0	3	0	0	0		45	60	2	0	1.8						

**Altogether in semester:**

Łączna liczba godzin					Total number of ZZU hours	Total number of CNPS hours	Total number ECTS points	Number of ECTS points for DN <sup>5</sup> classes	Number of ECTS points for BU <sup>1</sup> classes
Le	Cl	La	Pr	Se	h	h	Points	Points	Points
17	4	4	1	0	390	900	30	23	18.6

**Semester 3**

**Obligatory 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 <sup>2</sup> of course / group of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			Le	Cl	La	Pr	Se		ZZU	CNPS	total	DN classes <sup>5</sup>	BU classes <sup>1</sup>			University-wide <sup>4</sup>	rel. to scien. act. <sup>5</sup>	practical <sup>6</sup>	type <sup>7</sup>
1	n/d	Organization of construction works	1					K2EQM_W08, K2EQM_W09	15	60	2		0.8	T/Z	Z		0		K
2	n/d	Buildings regulations	2					K2EQM_W02	30	60	2		1.3	T/Z	Z		0		K
3	n/d	Renewable energy systems	1					K2EQM_W07	15	60	2	2	0.8	T/Z	Z		DN		K
		Total	4	0	0	0	0		60	180	6	2	2.9						

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct contact (attendance) of teachers with students

<sup>2</sup>Traditional – T, remote – Z

<sup>3</sup>Exam – E, crediting – Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)

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

<sup>5</sup>Course/ group of courses related to scientific activity – DN

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

<sup>7</sup>Optional – enter W, obligatory – enter Ob

**Optional courses (block 2 - choice of 1 courses)**

**number of ECTS points 2**

No.	Course/group of courses code	Name of course/group of courses (denote group of courses with symbol GK)	Weekly number of hours					Learning effect symbol	Number of hours		Number of ECTS points			Form <sup>2</sup> of course / group of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			Le	Cl	La	Pr	Se		ZZU	CNPS	total	DN classes <sup>5</sup>	BU classes <sup>1</sup>			Unive-rsity-wide <sup>4</sup>	rel. to scien. act. <sup>5</sup>	practi-cal. <sup>6</sup>	type <sup>7</sup>
1	n/d	Air pollutants and their sources	1					-	15	30	1		0.8	T/Z	Z				K
2	n/d	Air pollutants and their sources			1			-	15	30	1		0.8	T	Z			P	K
3	n/d	Modeling of water and sewage treatment processes	1					-	15	30	1		0.8	T/Z	Z				K
4	n/d	Modeling of water and sewage treatment processes			1			-	15	30	1		0.8	T	Z			P	K
Total			1	0	1	0	0		30	60	2	0	1.6						

**Diploma project (master thesis) block**

**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 <sup>2</sup> of course / group of courses	Way <sup>3</sup> of crediting	Course/group of courses			
			Le	Cl	La	Pr	Se		ZZU	CNPS	total	DN classes <sup>5</sup>	BU classes <sup>1</sup>			Unive-rsity-wide <sup>4</sup>	rel. to scien. act. <sup>5</sup>	practi-cal. <sup>6</sup>	type <sup>7</sup>
1	n/d	Diploma seminar					2	K2EQM_U06, K2EQM_U11	30	60	2		1.3	T/Z	Z		0	P	K
2	n/d	Diploma project (master thesis)				15		K2EQM_U06, K2EQM_U12	225	600	20	20	8	T	Z		DN	P	K
Total			0	0	0	15	2		255	660	22	20	9.3						

**Altogether in semester:**

łączna liczba godzin					Total number of ZZU hours	Total number of CNPS hours	Total number ECTS points	Number of ECTS points for DN <sup>5</sup> classes	Number of ECTS points for BU <sup>1</sup> classes
Le	Cl	La	Pr	Se	h	h	Points	Points	Points
5	0	1	15	2	345	900	30	22	13.8

<sup>1</sup>BU – number of ECTS points assigned to hours of classes requiring direct contact (attendance) of teachers with students

<sup>2</sup>Traditional – T, remote – Z

<sup>3</sup>Exam – E, crediting – Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)

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

<sup>5</sup>Course/ group of courses related to scientific activity – DN

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

<sup>7</sup>Optional – enter W, obligatory – enter Ob

**2 Set of examinations in semestral arrangement**

Course code	Names of courses ending with examination	Semester
n/d	Water quality management	1
n/d	Water treatment technology	1
n/d	Sanitary biology	1
n/d	Solid waste management	2
n/d	Waste gases purification	2

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

Semester	Allowable deficit of ECTS points after semester
1	6
2	6
3	0

Opinion of student government legislative body

.....

Date

.....

Name and surname, signature of student representative

.....

Date

.....

Dean's signature