

**Main field of study: Environmental Engineering**  
**Specialties: Environmental Biotechnology**

**Valid from the cycle:** 2018L  
**Educational profile of the program:** general academic  
**Enrollment status:** full-time  
**Type and level of program:** second degree studies  
**Area of science:** Technological sciences

**Year of study: 1, semester: 1**

Lp.	Course content	Semester	Total ECTS	ECTS credits for practical classes	Course completion requirements: Credit, Examination, G/C graded	Course status: Obligatory or Elective	Contact hours with academic teachers				practical	thesis
							total	lectures	classes	other		
<b>Group of content</b>												
<b>I - Wymagania ogólne</b>												
1	English support (1849S2-ENGSUP)	1	1	0,00	Z/O	o	15	0	15	2	0	0
Number of ECTS credits/number of contact hours (total)			1	0,00	x	x	15	0	15	2	0	0
Number of ECTS credits/number of contact hours (practical classes)				0,00	x	x	15	0	15		0	0
Number of ECTS credits/number of contact hours (electives)			0	0,00	x	x	0	0	0	0	0	0
<b>II - Podstawowych</b>												
1	Organic chemistry (1849S2-ORGCHEM)	1	4	1,20	E	o	45	15	30	4	0	0
Number of ECTS credits/number of contact hours (total)			4	1,20	x	x	45	15	30	4	0	0
Number of ECTS credits/number of contact hours (practical classes)				1,20	x	x	45	15	30		0	0
Number of ECTS credits/number of contact hours (electives)			0	0,00	x	x	0	0	0	0	0	0
<b>III - Kierunkowych</b>												
1	Analytical techniques (1849S2-ANTECH)	1	2	1,20	Z/O	o	30	0	30	2	0	0
Number of ECTS credits/number of contact hours (total)			2	1,20	x	x	30	0	30	2	0	0
Number of ECTS credits/number of contact hours (practical classes)				1,20	x	x	30	0	30		0	0
Number of ECTS credits/number of contact hours (electives)			0	0,00	x	x	0	0	0	0	0	0
<b>IV - Specjalnościowych</b>												
1	Molecular biotechnology (1849S2-MOLBIO)	1	2	1,04	Z/O	o	30	4	26	2	0	0
2	Designing of wastewater treatment systems (1849S2-DoWTS)	1	3	1,80	E	o	45	0	45	4	0	0
3	Technical biocenoses (1849S2-TECHBIO)	1	3	1,40	Z/O	o	45	10	35	2	0	0
4	Toxic chemical risk (1849S2-TCR)	1	4	1,80	E	o	60	15	45	4	0	0
5	Facultative course (module B) (1849S2-FACCOB)	1	5	0,00	Z/O	f	30	15	15	2	0	0
Number of ECTS credits/number of contact hours (total)			17	6,04	x	x	210	44	166	14	0	0
Number of ECTS credits/number of contact hours (practical classes)				6,04	x	x	210	44	166		0	0
Number of ECTS credits/number of contact hours (electives)			5	0,00	x	x	30	15	15	2	0	0
<b>VI - Praktyka</b>												
1	Professional internship (1849S2-PROINT)	1	6	0,00	Z/O	f	0	0	0	2	160	0
Number of ECTS credits/number of contact hours (total)			6	0,00	x	x	0	0	0	2	160	0
Number of ECTS credits/number of contact hours (practical classes)				0,00	x	x	0	0	2		160	0
Number of ECTS credits/number of contact hours (electives)			6	0,00	x	x	0	0	0	0	0	0
Number of ECTS credits/number of contact hours per semester 1			30	8,44	x	x	300	59	241	24	160	0

**Year of study: 1, semester: 2**

Lp.	Course content	Semester	Total ECTS	ECTS credits for practical classes	Course completion requirements: Credit, Examination, G/C graded	Course status: Obligatory or Elective	Contact hours with academic teachers				practical	thesis
							total	lectures	classes	other		
<b>Group of content</b>												
<b>II - Podstawowych</b>												
1	Environmental management (1849S2-EM)	2	1	0,00	Z/O	o	15	0	15	2	0	0
2	Statistics in environmental sciences (1849S2-SiAS)	2	3	1,80	Z/O	o	45	0	45	2	0	0
Number of ECTS credits/number of contact hours (total)			4	1,80	x	x	60	0	60	4	0	0
Number of ECTS credits/number of contact hours (practical classes)				1,80	x	x	60	0	60		0	0
Number of ECTS credits/number of contact hours (electives)			0	0,00	x	x	0	0	0	0	0	0
<b>III - Kierunkowych</b>												
1	Renewable sources of electrical energy (1849S2-RSoEE)	2	3	0,00	E	o	45	15	30	4	0	0
Number of ECTS credits/number of contact hours (total)			3	0,00	x	x	45	15	30	4	0	0
Number of ECTS credits/number of contact hours (practical classes)				0,00	x	x	45	15	30		0	0
Number of ECTS credits/number of contact hours (electives)			0	0,00	x	x	0	0	0	0	0	0
<b>IV - Specjalnościowych</b>												
1	Foreign language (module C) (1849S2-FLmC)	2	2	0,00	Z/O	f	30	0	30	2	0	0
2	Facultative course (module A) (1849S2-FACCOA)	2	3	1,20	Z/O	f	45	15	30	2	0	0
3	Technologies of alge biomass produktion (1849S2-ToABP)	2	2	1,20	Z/O	o	30	0	30	2	0	0
4	Membrane techniques in environmental engineering (1849S2-MTIEE)	2	3	0,20	Z/O	o	45	15	30	2	0	0
5	Biocatalysis and biotransformation in environmental biotechnology (1849S2-BaBiEB)	2	3	1,20	Z/O	o	45	15	30	2	0	0
6	Bioremediation (1849S2-BIORE)	2	3	1,40	E	o	45	10	35	4	0	0
7	Biotechnology of solid waste (1849S2-BoSW)	2	3	0,00	Z/O	o	45	15	30	2	0	0
8	Environmental biotechnology (1849S2-EB)	2	4	1,80	E	o	60	15	45	4	0	0
Number of ECTS credits/number of contact hours (total)			23	7,00	x	x	345	85	260	20	0	0
Number of ECTS credits/number of contact hours (practical classes)				7,00	x	x	345	85	260		0	0
Number of ECTS credits/number of contact hours (electives)			5	1,20	x	x	75	15	60	4	0	0
Number of ECTS credits/number of contact hours per semester 2			30	8,80	x	x	450	100	350	28	0	0
Number of ECTS credits/number of contact hours on 1 year of study			60	17,24	x	x	750	159	591	52	160	0

**Year of study: 2, semester: 3**

Lp.	Course content	Semester	Total ECTS	ECTS credits for practical classes	Course completion requirements: Credit, Examination, G/C graded	Course status: Obligatory or Elective	Contact hours with academic teachers				practical	thesis
							total	lectures	classes	other		
<b>Group of content</b>												
<b>IV - Specjalnościowych</b>												
1	Master Thesis/professional practice (1849S2-MTPP)	3	20	0,00	Z/O	f	200	0	200	0	0	200
2	MA Seminary (1849S2-MSEM)	3	5	0,00	Z/O	f	75	0	75	2	0	0
3	Facultative course (module A) (1849S2-FACCOA)	3	3	1,20	Z/O	f	45	15	30	2	0	0
4	Bioprocess engineering (1849S2-BIOENG)	3	2	0,60	BRAK	o	30	0	30	2	0	0
<b>Number of ECTS credits/number of contact hours (total)</b>			30	1,80	x	x	350	15	335	6	0	0
<b>Number of ECTS credits/number of contact hours (practical classes)</b>				1,80	x	x	350	15	335		0	0
<b>Number of ECTS credits/number of contact hours (electives)</b>			28	1,20	x	x	320	15	305	4	0	0
<b>Number of ECTS credits/number of contact hours per semester 3</b>			<b>30</b>	<b>1,80</b>	x	x	<b>350</b>	<b>15</b>	<b>335</b>	<b>6</b>	<b>0</b>	<b>200</b>
<b>Number of ECTS credits/number of contact hours on 2 year of study</b>			<b>30</b>	<b>1,80</b>	x	x	<b>350</b>	<b>15</b>	<b>335</b>	<b>6</b>	<b>0</b>	<b>200</b>

Lp.	Course content	Total ECTS	ECTS credits for practical classes	Contact hours with academic teachers				practical	thesis
				total	lectures	classes	other		
<b>Number of ECTS credits/number of contact hours in the study plan</b>		<b>90</b>	<b>19,04</b>	<b>1100</b>	<b>174</b>	<b>926</b>	<b>58</b>	<b>160</b>	<b>200</b>
<b>Group of content</b>									
<b>I - Wymagania ogólne</b>									
	Number of ECTS credits/number of contact hours (total)	1	0,00	15	0	15	2	0	0
	Number of ECTS credits/number of contact hours (practical classes)		0,00	15	0	15	2	0	0
	Number of ECTS credits/number of contact hours (electives)	0	0,00	0	0	0	0	0	0
<b>II - Podstawowych</b>									
	Number of ECTS credits/number of contact hours (total)	8	3,00	105	15	90	8	0	0
	Number of ECTS credits/number of contact hours (practical classes)		3,00	105	15	90	8	0	0
	Number of ECTS credits/number of contact hours (electives)	0	0,00	0	0	0	0	0	0
<b>III - Kierunkowych</b>									
	Number of ECTS credits/number of contact hours (total)	5	1,20	75	15	60	6	0	0
	Number of ECTS credits/number of contact hours (practical classes)		1,20	75	15	60	6	0	0
	Number of ECTS credits/number of contact hours (electives)	0	0,00	0	0	0	0	0	0
<b>IV - Specjalnościowych</b>									
	Number of ECTS credits/number of contact hours (total)	70	14,84	905	144	761	40	0	0
	Number of ECTS credits/number of contact hours (practical classes)		14,84	905	144	761	40	0	0
	Number of ECTS credits/number of contact hours (electives)	38	2,40	425	45	380	10	0	0
<b>VI - Praktyka</b>									
	Number of ECTS credits/number of contact hours (total)	6	0,00	0	0	0	2	160	0
	Number of ECTS credits/number of contact hours (practical classes)		0,00	0	0	0	2	160	0
	Number of ECTS credits/number of contact hours (electives)	6	0,00	0	0	0	0	0	0

I	ECTS credits summary quantitative indicators, including:	ECTS credits		Hours	
		Number	%	Number	%
	<b>Total - study plan</b>	90	100%	2250	100%
1	requiring direct participation of an academic teacher	46	51,38%	1158	51,47%
2	in the field of basic science	8	8,89%	105	4,67%
3	practical (laboratory, design, workshop)	19,04	21,16%	476	21,16%
4	university-wide or carried out in a different direction	0	0,00%	0	0,00%
5	classes to choose from - at least 30% of ECTS credits	44	48,89%	625	18,89%
6	dimension of practices	6	6,67%	160	7,11%
7	classes in physical education	-	-	0	0,00%
8	foreign language classes	0	0,00%	0	0,00%
9	subjects in the humanities or social sciences	1	1,11%	15	0,67%

II	Percentage share of ECTS credits for each of the education areas in the total number of ECTS credits	%
1	Technological sciences	100,00%
<b>Summary:</b>		<b>100%</b>

**List of groups of subjects****1 - Facultative course (module A)**

- 1) Algae biomass - sources and methods of application
- 2) Biomarkers of environmental contamination
- 3) Designing biowaste treatment processes
- 4) Designing of agriculture biogas plants
- 5) Informative techniques in environmental biotechnology
- 6) Introduction to nanobiotechnology
- 7) Microorganisms in industry
- 8) Modeling of selected biotechnological processes
- 9) Molecular Diagnostics
- 10) Technologies of Biopolymer Production
- 11) Technology of aerobic granular sludge

**2 - Facultative course (module B)**

- 1) Communication skills
- 2) Ecological and social aspects of biotechnology
- 3) Ecological aspects of biotechnology
- 4) Informative techniques in environmental biotechnology
- 5) Writing scientific papers

**3 - Foreign language (module C)**

- 1) English for biotechnologists
- 2) German for biotechnologists
- 3) Polish language