## **Faculty of Environmental Sciences** Programme of studies in the field of Environmental Engineering Specialty: Environmental Biotechnology Valid for academic year 2019/2020 in the first year of studies

Resolution No. Xxx of the Faculty Council of 12 April 2019

4904-BS-A\_KRK

Educational profile: general academic

Form of studies: full time

Educational form/level of studies: **second grade**Qualifications obtained: second grade
field: engineering and technical sciences

discipline: environmental engineering, mining and energy

Educational area: technical

	Year of studies: I, semester 1																	
No.			N	umber of ECTS poi	nts	Number	Form of	Status				Number of	didactic hou	rs				
	Name of the module /		total	with direct	independent	of	crediting	of the course	total		ind	cluding: orga	anized class			other*		
	course	ster		participation	student's	ECTS points		obligatory (o)		lectures			classes					
		лез		of an academic	work	for practical		or				у.		g	<u></u>		internship	Master thesis
		Sen		teacher		classes		facultative (f)			tutorial	boratory	fleld	ir	onte			
											tuto	por	fie	designing	compu			
												<u>e</u>		р	Ö			
	Content group																	
I	General requirements																	
1	English support 1849S2-ENGSUP	1	1	0,68	0,32	0	z/o	0	15		15					2		
	Number of ECTS points/didactic hours (total)		1	0,68	0,32	0			15		15					2		
	Number of ECTS points/didactic hours (practical classes)					0												
	Number of ECTS points/didactic hours (facultative courses)		0			0												
II	Basic																	
1	Organic chemistry 1849S2-ORGCHEM	1	3	1,96	1,04	1,2	е	0	45	15		30				4		
	Number of ECTS points/didactic hours (total)		3	1,96	1,04	1,2			45	15		30				4		
	Number of ECTS points/didactic hours (practical classes)		1,2			1,2			45									
	Number of ECTS points/didactic hours (facultative courses)		Ô			Ô												
Ш	Subject area																	
1	Analytical techniques 1849S2-ANTECH	1	2	1,28	0,72	1,2	z/o	0	30			30				2		
	Number of ECTS points/didactic hours (total)		2	1,28	0,72	1,2			30			30				2		
	Number of ECTS points/didactic hours (practical classes)		1,2			1,2			30									
	Number of ECTS points/didactic hours (facultative courses)		0			0												
IV	Specialty area			-														
1	Toxic chemical risk 1849S2-TCR	1	4	2,56	1,44	1,8	е	0	60	15		30			15	4		
2	Technical biocenoses 1849S2-TECHBIO	1	3	1,88	1,12	1,4	z/o	0	45	10		30			5	2		
3	Designing of wastewater treatment systems 1849S2-DoWTS	1	3	1,96	1,04	1,8	е	0	45	0				45		4		
4	Molecular biotechnology 1849S2-MOLBIO	1	2	1,28	0,72	1,04	z/o	0	30	4		20			6	2		
5	Bioprocess engineering 1849S2-BIOENG	1	3	1,28	1,72	0,6	z/o	0	30	0	15				15	2		
6	Facultative course (module A) 1849S2-FACCOA	1	3	1,88	1,12	1,2	z/o	f	45	15				30		2		
	Number of ECTS points/didactic hours (total)		18	10,84	7,16	7,84			255	44	15	80		75	41	16		
	Number of ECTS points/didactic hours (practical classes)		7,84	- , -	, -	7,84			211									
	Number of ECTS points/didactic hours (facultative courses)		3	1,88	1,12	1,2			30									
٧	Specialisation			•		•		-										
	Number of ECTS points/didactic hours (total)																	
	Number of ECTS points didactic hours (practical classes)																	
	Number of ECTS points/didactic hours (facultative courses)																	
VI	Other requirements							-										
	Number of ECTS points/didactic hours (total)																	
VII	Internship																	
1	Professional internship 1849S2-PROINT	1_	6	6	0	6	z/o	o/f								2	160	
	Number of ECTS points/didactic hours (total)		6			6												
	Number of ECTS points/didactic hours (practical classes)		6			6												
	Number of ECTS points/didactic hours (facultative courses)		6			6												
No.	of ECTS p./didactic hours in semester 1		30	20,76	9,24	16,24			345	59	30	140		75	41	26	160	
	Number of ECTS points/didactic hours (practical classes)					16,24												
	Number of ECTS points/didactic hours (facultative courses)		9			7,2												

Year of studies: I, semester 2

Year of studies: I, semester 2	1 1	N	lumber of ECTS poi	ints	Number	Form of	Status	1			Number of didactic hours						1
Name of the module /		total	with direct	independent	of	creditina	of the course	total					nized classes		other*	<b>i</b> I	
course	Ē		participation	student's	ECTS points		obligatory (o)		lectures		classes**						
	Semester		of an academic teacher	work	for practical classes		or facultative (f)			tutorial	laboratory	field	designing	computer	computer	Internship	Master thesis
Content group																	
I General requirements																	
Number of ECTS points/didactic hours (total)																	
Number of ECTS points/didactic hours (practical classes)																	
Number of ECTS points/didactic hours (facultative courses)																	
II Basic			1														
1 Environmental management 1849S2-EM	2	1	0.68	0.32	0	z/o	0	15		15					2		
2 Statistics in environmental sciences 1849S2-SiAS	2	3	1.28	1.72	1.8	z/o	0	45			i e			45	2		
Number of ECTS points/didactic hours (total)		4	1.96	2.04	1.8		Ť	60		15			i	45	4		
Number of ECTS points/didactic hours (practical classes)		1.8	1,00	<u>-,</u> , , .	1.8			60		- 10	<b>†</b>			<u> </u>			
Number of ECTS points/didactic hours (facultative courses)		0			0												
III Subject area		Ü	1		·												
1 Renewable sources of electrical energy 1849S2-RSoEE	2	3	1.36	1.64	0	е	0	45	15	30					4		
Number of ECTS points/didactic hours (total)		3	1.36	1.64	Ö	- J	Ŭ	45	15	30					4		
Number of ECTS points/didactic hours (practical classes)		0	.,00	.,0.	0			45		- 00							
Number of ECTS points/didactic hours (facultative courses)		Ö			0			- 10									
IV Specialty area																	
1 Environmental biotechnology 1849S2-EB	2	4	1,96	2.04	1.8	е	0	60	15		40			5	4		
2 Biotechnology of solid waste 1849S2-BoSW	2	3	1.28	1.72	0	z/o	0	45	15	30					2		
3 Bioremediation 1849S2-BIORE	2	3	1.56	1.44	1.4	е	0	45	10		35				4		
4 Biocatalysis and biotransformation in environmental biotechnology 1849S2-BaBiEB	2	3	1.28	1.72	1.2	z/o	0	45	15		30				2		
5 Membrane techniques in environmental engineering 1849S2-MTiEE	2	3	1.28	1.72	0.2	z/o	0	45	15	25	5				2		
6 Technologies of algae biomass production 1849S2-ToABP	2	2	0.88	1.12	1.2	z/o	0	30	0		30				2		
7 Facultative course (module A) 1849S2-FACCOA	2	3	1.28	1.72	1.2	z/o	f	45	15				30		2		
8 Foreign language (module C) 1849S2-FLmC	2	2	1.28	0.72	0	z/o	f	30	0	30					2		
Number of ECTS points/didactic hours (total)		23	10,8	12,2	7			345	85	85	140		30	5	20		
Number of ECTS points/didactic hours (practical classes)	1	7	- , -	, , , , , , , , , , , , , , , , , , ,	7			260									
Number of ECTS points/didactic hours (facultative courses)	1	5	2,56	2,44	1,2			75			Ì						
V Specialisation	- '	-				-	-		-	-	•	-	-	-		•	
Number of ECTS points/didactic hours (total)				1			1				1						
Number of ECTS points/didactic hours (practical classes)																	
Number of ECTS points/didactic hours (facultative courses)	1										Ì						
VI Other requirements	- '	-	-	-	-	-	-	•	-	-	•	-	-	-		•	
Number of ECTS points/didactic hours (total)																	
VII Internship	1										Ì						
No. of ECTS p./didactic hours in semester 2		30	14,12	15,88	8,8			450	100	130	140		30	50	28		
No. of ECTS p./didactic hours in 1st year of studies	1	60	34,88	25,12	25,04			795	159	160	280		105	91	54	160	
Number of ECTS points/didactic hours (practical classes)					8,8												
Number of ECTS points/didactic hours (facultative courses)		5			1,2												

Year of studies: II. semester 3

	er 3																	
No.			N	umber of ECTS poi	nts	Number	Form of	Status			Number of didactic hours							
l l	Name of the module /		total	with direct	independent	of	crediting	of the course	total		in	cluding: org	organized classes			other*	1	
	course	ter		participation	student's	ECTS points		obligatory (o)		lectures	ectures classes**						1	
		nes		of an academic work	for practical		or				>		д	Ť.		Internship	Master thesis	
		Sem		teacher		classes		facultative (f)			orial	ato	plei	igning	mpute			
											t t	abor	lje e	esić.	m ox			
												<u>a</u>		Ф	ō			
Content group																		
I General requirements																		
Number of ECTS points/didactic hours	(total)																	
Number of ECTS points/didactic hours	(practical classes)																	
Number of ECTS points/didactic hours	(facultative courses)																	
II Basic																		
Number of ECTS points/didactic hours	(total)																	
Number of ECTS points/didactic hours	(practical classes)																	
Number of ECTS points/didactic hours	(facultative courses)																	
III Subject area																		
Number of ECTS points/didactic hours	(total)																	
Number of ECTS points/didactic hours	(practical classes)																	
Number of ECTS points/didactic hours	(facultative courses)																	
IV Specialty area																		
1 Facultative course (modul		3	3	1,28	1,72	1,2	z/o	f	45	15				30		2		
2 Facultative course (modul		3	2	1,28	0,72	0	z/o	f	30	15	15					2		
3 MA Seminary 1849S2-MSE		3	5	2,48	2,52	0	z/o	o/f	75	0	75					2		
4 Master thesis/professiona	I practice*** 1849S2-MTPP	3	20	8	12	0	z/o	o/f	200	0								200
Number of ECTS points/didactic hours	(total)		30	13,04	16,96	1,2			350	30	90			30		6		200
Number of ECTS points/didactic hours	(practical classes)		1,2			1,2			230									
Number of ECTS points/didactic hours	(facultative courses)		30	13,04	16,96	1,2			350									
V Specialisation																		
Number of ECTS points/didactic hours	(total)																	
Number of ECTS points/didactic hours	(practical classes)																	
Number of ECTS points/didactic hours	(facultative courses)					, i												
VI Other requirements																		
Number of ECTS points/didactic hours	(total)					, i												
VII Internship						·												
No. of ECTS p./didactic hours in semeste			30	13,04	16,96	1,2			350	30	90			30		6		200
No. of ECTS p./didactic hours in 2nd year			30	10,92	18,08	·			270	25	75			20		6		200
Number of ECTS points/didactic hours						1,2												
Number of ECTS points/didactic hours	(facultative courses)		30			1,2												

Total programme of studies - sum of hours and ECTS points

No	Total programme of studies - sum of hours and ECTS points	1	I .	Number of ECTS po	nints	Number	Form of	Status				Number of	didactic hou	ırs				
140.	Name of the module /								other*	1								
	course	^	totai	participation	student's	ECTS points for	Crediting	obligatory (o)	iotai	lectures		classes**			Other	i I		
	Course			of an academic	work	practical		or or		iectures			0.00000	T		ł	Internship	Master thesis
				teacher	WOIK	classes		facultative (f)			tutorial	laboratory	field	designing	designing			Waster tresis
$\vdash$	Number of ECTS points / didactic hours in the study programme	х	90	47.92	42.08	26.24	×	x	1145	189	250	280	0	135	76	60	160	200
	including in total - content group:	<del>- ^-</del>	- 00	,02	,00	20,2 .				.00								
ı	General requirements																	
	Number of ECTS points/didactic hours (total)	Х	1	0,68	0,32	0	Х	х	15		15					2		
	Number of ECTS points/didactic hours (practical classes)	Х	0				Х	х										
	Number of ECTS points/didactic hours (facultative courses)	Х	0			0	Х	х	0									
II	Basic																	
	Number of ECTS points/didactic hours (total)	Х	7	3,92	3,08	3	Х	Х	105	15	15	30			30	8		
	Number of ECTS points/didactic hours (practical classes)	Х	3				Х	х										
	Number of ECTS points/didactic hours (facultative courses)	Х	0				Х	Х	0									
Ш	Subject area																	
	Number of ECTS points/didactic hours (total)	Х	5	2,64	2,36	1,2	X	Х	75	15	30	30				6		
	Number of ECTS points/didactic hours (practical classes)	Х	1,2				Х	Х										
	Number of ECTS points/didactic hours (facultative courses)	Х	0				X	Х	0									
IV	Specialty area																	
	Number of ECTS points/didactic hours (total)	Х	71	34,68	36,32	16,04	X	Х	950	159	190	220		135	46	42		
	Number of ECTS points/didactic hours (practical classes)	Х	16,04				Х	Х										
	Number of ECTS points/didactic hours (facultative courses)	Х	38	17,48	20,52	0	Х	Х	455									
٧	Specialisation																	
	Number of ECTS points/didactic hours (total)																	
	Number of ECTS points/didactic hours (practical classes)																	
	Number of ECTS points/didactic hours (facultative courses)																	
VI	Other requirements																	
	Number of ECTS points/didactic hours (total)																	
VII	Internship																	
1	Professional internship	1	6	6	0	6	z/o	o/f						Ì		2	160	
	Number of ECTS points/didactic hours (total)		6		İ	6								Ì				
	Number of ECTS points/didactic hours (practical classes)		6	Ī	Ī	6												
	Number of ECTS points/didactic hours (facultative courses)		6	Ī	Ī	6												
			90	47,92	42,08	26,24			1145	189	250	280	0	135	76	60	160	200

T	ECTS points:	ECTS	points:	He	ours
	Summary quantity indicators	Number	%	Number	%
	including, classes:				
	Total - programm of studies	90	100	2250	100
1	requiring direct participation of an academic teacher	47,92	53,2	1505	66,9
2	in the scope of basic sciences	7	7,8	105	4,7
3	of practical nature (laboratory, field, computer)	26,24	29,16	691	
4	all-university or realized in other field of studies	0	0,0	0	0,0
5	optional courses - at least 30 % ECTS points	44	48,9	615	27,3
6	practice	6	6,7	160	7,1
7	subjects in the humanities or social sciences	4	4,4	60	2,7

II	Percentage share of ECTS points	
	for each of the educational discipline	%
	in the total number of ECTS points	
	Educational discipline	
1	environmental engineering, mining and energy	100
	Total % of ECTS points	100