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

Resolution No. 476 of the Faculty Council of 12 April 2019 4906-SMU-BIOT-KRK

Educational profile: general academic
Form of studies: **full time**
Educational form/level of studies: **second grade**
Qualifications obtained: second grade
discipline: environmental engineering, mining and energy
Educational area: technical
Year of studies: I, semester 1

19L

No.	Name of the module / course	Semester	Number of ECTS points: total	Number of ECTS points: with direct participation of an academic teacher	Number of ECTS points: independent student's work	Number of ECTS points for practical classes	Form of crediting	Status of the course obligatory (o) or facultative (f)	Number of didactic hours: total	Including: organized classes: lectures	Classes: tutorial	Classes: laboratory	Classes: field	Classes: designing	Classes: computer	other*	Practice	Master thesis
	Content group																	
I	General requirements																	
1	**Writing scientific papers** 1849S2-WSCP	1	**2**	1,07	0,93	0,00	**z/o**	o	**30**		**30**					2		
2	**Design thinking** 1849S2-DET	1	**2**	1,07	0,93	0,00	**z/o**	o	**30**		**30**					2		
	Number of ECTS points/didactic hours (total)		4,0	2,13	1,87	0,00			60		60					4		
	Number of ECTS points/didactic hours (practical classes)					0,00			0									
	Number of ECTS points/didactic hours (facultative courses)		0			0,00			0									
II	Basic																	
1	**Environmental biotechnology** 1849S2-ENB	1	**4**	2,07	1,93	1,50	**z/o**	o	**60**	**15**		**30**	**15**			2		
2	**Introduction to food biotechnology** 1849S2-INFB	1	**3**	1,63	1,37	1,00	**e**	o	**45**	**15**		**30**				4		
	Number of ECTS points/didactic hours (total)		7,0	3,7	3,3	2,50			105	30		60	15			6		
	Number of ECTS points/didactic hours (practical classes)		2,5			2,50			75									
	Number of ECTS points/didactic hours (facultative courses)		0			0,00			0									
III	Subject area																	
1	**Biorefineries** 1849S2-BRF	1	**1**	0,80	0,20	0,50	**e**	o	**20**	**5**				**15**		4		
2	**Molecular biology techniques in biotechnology** 1849S2-MBTB	1	**2**	1,07	0,93	0,66	**z/o**	o	**30**	**10**		**20**				2		
	Number of ECTS points/didactic hours (total)		3	1,87	1,13	1,16			50	15		20		15		6		
	Number of ECTS points/didactic hours (practical classes)		1,16			1,16			35									
	Number of ECTS points/didactic hours (facultative courses)		0			0,00			0									
IV	Specialty area																	
1	**Bioproducts from waste materials** 1849S2-BWM	1	**3**	1,63	1,37	1,00	**e**	o	**45**	**15**		**20**		**10**		4		
2	**Biological methods of food and feed preservation** 1849S2-BMFF	1	**3**	1,63	1,37	1,00	**e**	o	**45**	**15**		**30**				4		
3	**Enzyme technology and bioinformatics** 1849S2-ENTB	1	**4**	2,13	1,87	1,50	**e**	o	**60**	**15**					**45**	4		
4	**Module A - electives environmental biotechnology** 1849S2-MAE	1	**3**	1,40	1,60	0,50	**z/o**	f	**40**	**10**		**30**				2		
5	**Module B - electives food biotechnology** 1849S2-MDM	1	**3**	1,40	1,60	0,50	**z/o**	f	**40**	**10**		**30**				2		
	Number of ECTS points/didactic hours (total)		16	8,20	7,80	4,50			230	65		110		10	45	16		
	Number of ECTS points/didactic hours (practical classes)		4,5			4,50			165									
	Number of ECTS points/didactic hours (facultative courses)		6	2,80	3,20	1,00			80									
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)																	
VI	Other requirements																	
	Number of ECTS points/didactic hours (total)																	
VII	Internship																	
	Number of ECTS points/didactic hours (total)																	
	Number of ECTS points/didactic hours (practical classes)																	
	Number of ECTS points/didactic hours (facultative courses)																	
No. of ECTS p./didactic hours in semester 1			30	15,90	14,10	8,16			445	110	60	190		25	45	32		
	Number of ECTS points/didactic hours (practical classes)					8,16												
	Number of ECTS points/didactic hours (facultative courses)		6			1,00												

Year of studies: I, semester 2

No.	Name of the module / course	Semester	Number of ECTS points: total	Number of ECTS points: with direct participation of an academic teacher	Number of ECTS points: independent student's work	Number of ECTS points for practical classes	Form of crediting	Status of the course obligatory (o) or facultative (f)	Number of didactic hours: total	Including: organized classes: lectures	Classes**: tutorial	Classes**: laboratory	Classes**: field	Classes**: designing	Classes**: computer	other*	Practice	Master thesis
	Content group																	
I	General requirements																	
1	**Bioperspectives and bioethics** 1849S2-BIB	2	**2**	1,07	0,93	0,00	**z/o**	o	**30**		**30**					2		
2	**Module C - non-technical competences** 1849S2-MDC	2	**4**	2,13	1,87	0,00	**z/o**	f	**60**		**60**					4		
	Number of ECTS points/didactic hours (total)		6	3,20	2,80	0,00			90		90					6		
	Number of ECTS points/didactic hours (practical classes)		0			0,00			0									
	Number of ECTS points/didactic hours (facultative courses)		4			0,00			60									
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																	
1	**Bioenergy** 1849S2-BIOE	2	**2**	1,13	0,87	0,00	**e**	o	**30**	**30**						4		
2	**Bioenergy (laboratory)** 1849S2-BIOL	2	**2**	1,07	0,93	1,00	**z/o**	o	**30**			**30**				2		
3	**Biobased industry** 1849S2-BIOI	2	**6**	2,07	3,93	0,00	**z/o**	o	**60**		**60**					2		
	Number of ECTS points/didactic hours (total)		10	4,27	5,73	1,00			120	30	60	30				8		
	Number of ECTS points/didactic hours (practical classes)		1			0,00			30									
	Number of ECTS points/didactic hours (facultative courses)		0			0,00			0									
IV	Specialty area																	
1	**Biotechnological processes from lab to market**	2	**4**	2,13	1,87	0,00	**e**	o	**60**	**60**						4		
2	**Biotechnological processes from lab to market (laboratory)** 1849S2-BPLL	2	**6**	2,07	3,93	2,00	**z/o**	o	**60**			**60**				2		
3	**Regulatory affairs and safety in biotechnology** 1849S2-RASB	2	**2**	1,07	0,93	0,00	**z/o**	o	**30**	**30**						2		
4	**Process control and engineering** 1849S2-PRCE	2	**2**	1,13	0,87	0,00	**e**	o	**30**	**30**						4		
	Number of ECTS points/didactic hours (total)		14	6,40	7,60	2,00			180	120		60				12		
	Number of ECTS points/didactic hours (practical classes)		2			2,00			60									
	Number of ECTS points/didactic hours (facultative courses)								0									
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)																	
VI	Other requirements																	
	Number of ECTS points/didactic hours (total)																	
VII	Internship																	
No. of ECTS p./didactic hours in semester 2			30	13,87	16,13	3,00	0	0	390	150	150	90	0	0	0	26		
No. of ECTS p./didactic hours in 1st year of studies			60	29,77	30,23333	11,16			835	260	210	280		25	45	58		
	Number of ECTS points/didactic hours (practical classes)					2,00												
	Number of ECTS points/didactic hours (facultative courses)		4			0,00												

Year of studies: II, semester 3

20L

No.	Name of the module / course	Semester	Number of ECTS points: total	Number of ECTS points: with direct participation of an academic teacher	Number of ECTS points: independent student's work	Number of ECTS points for practical classes	Form of crediting	Status of the course obligatory (o) or facultative (f)	Number of didactic hours: total	including: organized classes: lectures	classes**: tutorial	classes**: laboratory	classes**: field	classes**: designing	classes**: computer	other*	Practice	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																	
	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	**MA Seminary** 1849S2-MSE	3	**2**	1,07	0,93	0,00	**z/o**	o/f	**30**	**0**	**30**					2		
2	**Master thesis/practice** 1849S2-MAT	3	**28**	18,48	9,52	26,67	**e**	f	**600**								600	**200**
	Number of ECTS points/didactic hours (total)		30	19,55	10,45	26,67			630		30					2	600	**200**
	Number of ECTS points/didactic hours (practical classes)		26,67			0,00			0									
	Number of ECTS points/didactic hours (facultative courses)		30	19,55	10,45	26,67			630									
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)																	
VI	Other requirements																	
	Number of ECTS points/didactic hours (total)																	
VII	Internship																	
No. of ECTS p./didactic hours in semester 3			30	19,55	10,45	26,67			630	0	30			0		2	600	200
No. of ECTS p./didactic hours in 2nd year of studies			30	19,55	10,45	26,67	0	0	630	0	30	0	0	0	0	2	600	200
	Number of ECTS points/didactic hours (practical classes)					26,67												
	Number of ECTS points/didactic hours (facultative courses)		30			26,67												

Total programme of studies - sum of hours and ECTS points

No.	Name of the module / course	X	Number of ECTS points: total	Number of ECTS points: with direct participation of an academic teacher	Number of ECTS points: independent student's work	Number of ECTS points for practical classes	Form of crediting	Status of the course obligatory (o) or facultative (f)	Number of didactic hours: total	including: organized classes: lectures	classes**: tutorial	classes**: laboratory	classes**: field	classes**: designing	classes**: computer	other*	Practice	Master thesis
	Number of ECTS points / didactic hours in the study programme	**x**	90	49,31	40,69	37,83	x	x	1465	260	240	280	15	25	45	60	600	200
	including in total - content group:																	
I	**General requirements**																	
	Number of ECTS points/didactic hours (total)	x	10	5,33	4,67	0,00	x	x	150		150					10		
	Number of ECTS points/didactic hours (practical classes)	x	0				x	x										
	Number of ECTS points/didactic hours (facultative courses)	x	4			0,00	x	x	0									
II	**Basic**																	
	Number of ECTS points/didactic hours (total)	x	7	3,7	3,3	2,50	x	x	105	30	0	60	15	0	0	6		
	Number of ECTS points/didactic hours (practical classes)	x	2,5				x	x										
	Number of ECTS points/didactic hours (facultative courses)	x	0				x	x	0									
III	**Subject area**																	
	Number of ECTS points/didactic hours (total)	x	13	6,13	6,87	2,16	x	x	170	45	60	50	0	15	0	14		
	Number of ECTS points/didactic hours (practical classes)	x	2,16				x	x										
	Number of ECTS points/didactic hours (facultative courses)	x	0				x	x	0									
IV	**Specialty area**																	
	Number of ECTS points/didactic hours (total)	x	60	34,15	25,85	33,17	x	x	1040	185	30	170	0	10	45	30		
	Number of ECTS points/didactic hours (practical classes)	x	33,17				x	x										
	Number of ECTS points/didactic hours (facultative courses)	x	36	22,35	13,65	0,00	x	x	770									
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)																	
VI	**Other requirements**																	
	Number of ECTS points/didactic hours (total)																	
VII	Internship																	
1	Professional internship	x																
	Number of ECTS points/didactic hours (total)																	
	Number of ECTS points/didactic hours (practical classes)																	
	Number of ECTS points/didactic hours (facultative courses)																	
			90	49,31	40,69	37,83			1465	260	240	280	0	25	45	60	600	200

I	ECTS points:	ECTS points: Number	ECTS points: %	Hours: Number	Hours: %
	Summary quantity indicators including, classes:				
	Total - programm of studies	90	100	2700	100,00
1	requiring direct participation of an academic teacher	49,31	54,8	2265	83,89
2	in the scope of basic sciences	7	7,8	105	3,89
3	of practical nature (laboratory, field, computer)	37,83	42,03	550	
4	all-university or realized in other field of studies	0	0,0	0	0,00
5	optional courses - at least 30 % ECTS points	40	44,4	1370	50,74
6	practice	28	31,1	600	22,22
7	subjects in the humanities or social sciences	10	11,1	150	5,56

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