1.	Field of study	Biotechnology
2.	Academic year of entry	2017/2018 (winter term)
	Academic year for which the revised course structure applies	
4.	Level of qualifications/degree	second-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time
7.	ISCED code	0512 (Biochemistry)

Specialization: Plant Biotechnology

No. Module Modu								yea	r 1	yea					
			form o	f teac	hing		sen	neste	er 1	semes	ter 2	seme	ster 3	sem	ester 4
No.	Module	E/C	Total	L		Total ECTS	L	0	Е	L O	Ε	L	O E	L	O E
1	Bioinformatics	Z	60	15	45	6	15	45	6						
2	Optional modules - semester 1 *[see description below]	*	30	10	20	4	10	20	4						
3	Plant biotechnology	Е	90	30	60	7	30	60	7						
4	Specialization laboratory I	Z	120		120	8		120	8						
5	Specialization seminar I		30		30	3		30	3						
6	Basics of microbial biotechnology	Е	45	10	35	4				10 35	4				
7	Bioethics	Z	30	15	15	2				15 15	2				
8	optional modules - semester 2 *[see description below]	*	60	20	40	6				20 40	6				
9	Social module	Z	30	30		З				30	3				
10	Specialization laboratory II	Z	120		120	8				120	8				
11	Specialization seminar II	Z	30		30	3			П	30	3				
12	Statistical methods in natural sciences	Z	45	10	35	4				10 35	4				
13	MSc laboratory I	Z	180		180	17			П			1	80 17		
14	MSc seminar I	Z	30		30	3						3	30 3		
15	Optional modules - semester 3 and 4 *[see description below]	*	200	50	150	20						25 7	<mark>'5 10</mark>	25	75 10
16	MSc laboratory II	Z	180		180	17									180 17

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E/C L

O ECTS

17 MSc seminar II			Z	30		30	3								3	0 3	
		TOTAI	L A:	1310	190	1120	L18	55	275	28	85 275	30	25 28	30	25 28	30	
C - Other requirements										year 1 year 2							
form of teaching									neste	er 1	semes	ter 2	seme	ster 3	seme	ster 4	
No.	Module		E/C	Total	L		otal CTS	L	0	Е	L O	Ш	L C	E	L C) E	
1 English classes			Z	30		30	2		30	2							
		TOTAL C - Other requireme	nts:	30	0	30	2	0	30	2	0 0	0	0 0	0	0 0	0	
		TOTA	AL:	1340	190	1150	L20	36	60	30	360	30	310	30	310	30	
	TOTAL											13	40				

The study ends with the awarding of a Master's Degree in the field of Biotechnology: Plant Biotechnology.

* Groups of modules

Optional modules - semester 1

Description:				
During the second cycle-studies of biotechnology, students choose optional modules from the list of modules. The choice of modules should be adjusted to the subject of the thesis realized by the student in the chosen Department and consulted with supervisor. The number of optional modules in each semester depends on the total number of credits allocated for their implementation (1-3 modules per semester). Students sign up the Dean's Office or electronically. Based on the declared number of students the dean decides to launch modules in a given semester.				
Modules:	E/C	L	0	ECTS
Food microbiology and nutritional physiology	С	10	20	4
Genetic and environmental components in human disease	С	10	10	2
GMO – benefits and threats	С	20	10	4
Mechanisms of evolution	С	30		4
Mechanisms of generative propagation of plants	С	15	30	4
Modelling of plant organ growth	С	10	35	4
Nutrigenomics and nutrigenetics	С	25	20	4
Organisms under environmental stress	С	10	20	4
Patch-clamp technique in the study of plant cells	С	5	20	2
Physiological bases for medicament effects	С	15	30	4

optional modules - semester 2

Description:

During the second cycle-studies of biotechnology, students choose optional modules from the list of modules.

The choice of modules should be adjusted to the subject of the thesis realized by the student in the chosen Department and consulted with supervisor.

The number of optional modules in each semester depends on the total number of credits allocated for their implementation (1-3 modules per semester).

Students sign up the Dean's Office or electronically. Based on the declared number of students the dean decides to launch modules in a given semester.

Modules:

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Biological bases for human and animal behavior	C 30 30
DNA markers	C 15 45
Environmental biotechnology	C 15 45
Food microbiology and nutritional physiology	C 10 20
Genetic and environmental components in human disease	C 10 10
GMO – benefits and threats	C 20 10
Histochemical and immunohistochemical techniques	C 10 50
Industrial microbiology	C 15 45
Mechanisms of evolution	C 30
Mechanisms of generative propagation of plants	C 15 30
Modelling of plant organ growth	C 10 35
Molecular cytogenetics	C 15 55
Nutrigenomics and nutrigenetics	C 25 20
Organisms under environmental stress	C 10 20
Patch-clamp technique in the study of plant cells	C 5 20
Physiological bases for medicament effects	C 15 30
Physiology of adaptation to environment	C 20 40
Phytoremediation	C 15 15
Plant genomics	C 15 45

Optional modules - semester 3 and 4

Б	escription:	

During the second cycle-studies of biotechnology, students choose optional modules from the list of modules.

The choice of modules should be adjusted to the subject of the thesis realized by the student in the chosen Department and consulted with supervisor.

The number of optional modules in each semester depends on the total number of credits allocated for their implementation (1-3 modules per semester).

Students sign up the Dean's Office or electronically. Based on the declared number of students the dean decides to launch modules in a given semester.

E/C L O ECTS Modules:

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Biological bases for human and animal behavior	С	30	30	6
DNA markers	С	15	45	6
Environmental biotechnology	С	15	45	6
Food microbiology and nutritional physiology	С	10	20	4
Genetic and environmental components in human disease	С	10	10	2
GMO – benefits and threats	С	20	10	4
Histochemical and immunohistochemical techniques	С	10	50	6
Industrial microbiology	С	15	45	6
Mechanisms of evolution	С	30		4
Mechanisms of generative propagation of plants	С	15	30	4
Modelling of plant organ growth	С	10	35	4
Molecular cytogenetics	С	15	55	6
Nutrigenomics and nutrigenetics	С	25	20	4
Organisms under environmental stress	С	10	20	4
Patch-clamp technique in the study of plant cells	С	5	20	2
Physiological bases for medicament effects	С	15	30	4
Physiology of adaptation to environment	С	20	40	6
Phytoremediation	С	15	15	4
Plant genomics	С	15	45	6

Each semester consists of 15 weeks

E/C - examination/course work

E - ECTS

L - lecture, O - all forms of teaching excluding lecture (practical classes, laboratory classes, discussion classes, seminar, proseminar, language classes, field practice, workshop, internship, tutoring)

Plan studiów zatwierdzony przez Radę Wydziału w dniu 26.05.2017 r.

Otrzymują:

1. Dział Kształcenia	

2. Wydział Biologii i Ochrony Środowiska

3. Dziekanat (pieczęć i podpis Dyrektora Instytutu) (pieczęć i podpis Dziekana)

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1.	Field of study	Biotechnology
2.	Academic year of entry	2017/2018 (winter term)
	Academic year for which the revised course structure applies	
4.	Level of qualifications/degree	second-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time
7.	ISCED code	0512 (Biochemistry)

Specialization: Environmental Biotechnology

Α									yea	r 1			yea	ar 2	
			form o	teac	hing		sem	neste	er 1	semes	ter 2	semes	ter 3	seme	ster 4
No.	Module	E/C	Total	٦	0	Total ECTS	L	0	E	L O	Е	L O	E	L (O E
1	Bioinformatics	Z	60	15	45	6	15	45	6						
2	Microbial biotechnology	Е	90	30	60	7	30	60	7						
3	Optional modules - semester 1 *[see description below]	*	30	10	20	4	10	20	4						
4	Specialization laboratory I	Z	120		120	8		120	8						
5	Specialization seminar I	Z	30		30	3		30	3						
6	Basics of plant biotechnology	Е	45	10	35	4				10 35	4				
7	Bioethics	Z	30	15	15	2				15 15	2				
8	optional modules - semester 2 *[see description below]	*	60	20	40	6				20 40	6				
9	Social module	Z	30	30		3				30	3				
10	Specialization laboratory II	Z	120		120	8				120	8				
11	Specialization seminar II	Z	30		30	3				30	3				
12	Statistical methods in natural sciences	Z	45	10	35	4				10 35	4				
13	MSc laboratory I	Z	180		180	17						18	0 17		
14	MSc seminar I	Z	30		30	3						30	3		
15	Optional modules - semester 3 and 4 *[see description below]	*	200	50	150	20						25 75	5 10	25 7	/5 10
16	MSc laboratory II	Z	180		180	17								1	80 17

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E/C L

O ECTS

17 MSc seminar II		7	30		30	3								30	3
		TOTAL .	A: 1310	190	1120	118	55	275 2	8 85	275	30	25 28	30	25 28	5 30
C - Other requirements year 1 year 2															
form of teaching										emeste	er 2	semes	ter 3	semes	ter 4
No.	Module	E	C Tota	L	О	Total ECTS	L	0 E	EL	О	Е	L O	E	L O	Е
1 English classes		Z	30		30	2		30 2	2						
		TOTAL C - Other requirement	s: 30	0	30	2	0	30 2	2 0	0	0	0 0	0	0 0	0
		TOTAL	.: 1340	190	1150	120	36	0 3	0 3	360	30	310	30	310	30
TOTAL											134	10			

The study ends with the awarding of a Master's Degree in the field of Biotechnology. Environmental Biotechnology.

* Groups of modules

Optional modules - semester 1

Description:				
During the second cycle-studies of biotechnology, students choose optional modules from the list of modules. The choice of modules should be adjusted to the subject of the thesis realized by the student in the chosen Department and consulted with supervisor. The number of optional modules in each semester depends on the total number of credits allocated for their implementation (1-3 modules per semester). Students sign up the Dean's Office or electronically. Based on the declared number of students the dean decides to launch modules in a given semester.				
Modules:	E/C	L	0	ECTS
Food microbiology and nutritional physiology	С	10	20	4
Genetic and environmental components in human disease	С	10	10	2
GMO – benefits and threats	С	20	10	4
Mechanisms of evolution	С	30		4
Mechanisms of generative propagation of plants	С	15	30	4
Modelling of plant organ growth	С	10	35	4
Nutrigenomics and nutrigenetics	С	25	20	4
Organisms under environmental stress	С	10	20	4
Patch-clamp technique in the study of plant cells	С	5	20	2
Physiological bases for medicament effects	С	15	30	4

optional modules - semester 2

Description:

During the second cycle-studies of biotechnology, students choose optional modules from the list of modules.

The choice of modules should be adjusted to the subject of the thesis realized by the student in the chosen Department and consulted with supervisor.

The number of optional modules in each semester depends on the total number of credits allocated for their implementation (1-3 modules per semester).

Students sign up the Dean's Office or electronically. Based on the declared number of students the dean decides to launch modules in a given semester.

Modules:

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Biological bases for human and animal behavior	C 30 30
DNA markers	C 15 45
Environmental biotechnology	C 15 45
Food microbiology and nutritional physiology	C 10 20
Genetic and environmental components in human disease	C 10 10
GMO – benefits and threats	C 20 10
Histochemical and immunohistochemical techniques	C 10 50
Industrial microbiology	C 15 45
Mechanisms of evolution	C 30
Mechanisms of generative propagation of plants	C 15 30
Modelling of plant organ growth	C 10 35
Molecular cytogenetics	C 15 55
Nutrigenomics and nutrigenetics	C 25 20
Organisms under environmental stress	C 10 20
Patch-clamp technique in the study of plant cells	C 5 20
Physiological bases for medicament effects	C 15 30
Physiology of adaptation to environment	C 20 40
Phytoremediation	C 15 15
Plant genomics	C 15 45

Optional modules - semester 3 and 4

Б	escription:

During the second cycle-studies of biotechnology, students choose optional modules from the list of modules.

The choice of modules should be adjusted to the subject of the thesis realized by the student in the chosen Department and consulted with supervisor.

The number of optional modules in each semester depends on the total number of credits allocated for their implementation (1-3 modules per semester).

Students sign up the Dean's Office or electronically. Based on the declared number of students the dean decides to launch modules in a given semester.

E/C L O ECTS Modules:

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Biological bases for human and animal behavior	С	30	30	6
DNA markers	С	15	45	6
Environmental biotechnology	С	15	45	6
Food microbiology and nutritional physiology	С	10	20	4
Genetic and environmental components in human disease	С	10	10	2
GMO – benefits and threats	С	20	10	4
Histochemical and immunohistochemical techniques	С	10	50	6
Industrial microbiology	С	15	45	6
Mechanisms of evolution	С	30		4
Mechanisms of generative propagation of plants	С	15	30	4
Modelling of plant organ growth	С	10	35	4
Molecular cytogenetics	С	15	55	6
Nutrigenomics and nutrigenetics	С	25	20	4
Organisms under environmental stress	С	10	20	4
Patch-clamp technique in the study of plant cells	С	5	20	2
Physiological bases for medicament effects	С	15	30	4
Physiology of adaptation to environment	С	20	40	6
Phytoremediation	С	15	15	4
Plant genomics	С	15	45	6

Legend

Each semester consists of 15 weeks

E/C - examination/course work

E - ECTS

L - lecture, O - all forms of teaching excluding lecture (practical classes, laboratory classes, discussion classes, seminar, proseminar, language classes, field practice, workshop, internship, tutoring)

Plan studiów zatwierdzony przez Radę Wydziału w dniu 26.05.2017 r.

Otrzymują:

1.	. Dzia	ł Kształo	cenia		
_				4	

3. Dziekanat (pieczęć i podpis Dyrektora Instytutu) (pieczęć i podpis Dziekana)

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