1.	**Field of study**	**Biotechnology**
2.	Academic year of entry	2017/2018 (winter term)
3.	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

A

			form of teaching				year 1						year 2					
							semester 1			semester 2			semester 3			semester 4		
No.	**Module**	**E/C**	**Total**	**L**	**O**	**Total ECTS**	**L**	**O**	**E**	**L**	**O**	**E**	**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	E	90	30	60	7	30	60	7									
4	Specialization laboratory I	Z	120		120	8		120	8									
5	Specialization seminar I	Z	30		30	3		30	3									
6	Basics of microbial biotechnology	E	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								180	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	10	25	75	10
16	MSc laboratory II	Z	180		180	17											180	17

17	MSc seminar II	Z	30		30	3															30	3
	TOTAL A:	**1310**	**190**	**1120**	**118**	**55**	**275**	**28**	**85**	**275**	**30**	**25**	**285**	**30**	**25**	**285**	**30**

C - Other requirements

			form of teaching				year 1						year 2					
							semester 1			semester 2			semester 3			semester 4		
No.	**Module**	**E/C**	**Total**	**L**	**O**	**Total ECTS**	**L**	**O**	**E**	**L**	**O**	**E**	**L**	**O**	**E**	**L**	**O**	**E**
1	English classes	Z	30		30	2		30	2									
	TOTAL C - Other requirements:		**30**	**0**	**30**	**2**	**0**	**30**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	TOTAL:		**1340**	**190**	**1150**	**120**	**360**		**30**	**360**		**30**	**310**		**30**	**310**		**30**
TOTAL							**1340**											

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**	**O**	**ECTS**
Food microbiology and nutritional physiology	C	10	20	4
Genetic and environmental components in human disease	C	10	10	2
GMO – benefits and threats	C	20	10	4
Mechanisms of evolution	C	30		4
Mechanisms of generative propagation of plants	C	15	30	4
Modelling of plant organ growth	C	10	35	4
Nutrigenomics and nutrigenetics	C	25	20	4
Organisms under environmental stress	C	10	20	4
Patch-clamp technique in the study of plant cells	C	5	20	2
Physiological bases for medicament effects	C	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:	**E/C**	**L**	**O**	**ECTS**

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

Optional modules - semester 3 and 4

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**	**O**	**ECTS**

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

..... (pieczęć i podpis Dyrektora Instytutu)

..... (pieczęć i podpis Dziekana)

1.	**Field of study**	**Biotechnology**
2.	Academic year of entry	2017/2018 (winter term)
3.	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

A

			form of teaching				year 1						year 2					
							semester 1			semester 2			semester 3			semester 4		
No.	Module	E/C	Total	L	O	Total ECTS	L	O	E	L	O	E	L	O	E	L	O	E
1	Bioinformatics	Z	60	15	45	6	15	45	6									
2	Microbial biotechnology	E	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	E	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								180	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	10	25	75	10
16	MSc laboratory II	Z	180		180	17											180	17

17	MSc seminar II	Z	30		30	3															30	3
	TOTAL A:	**1310**	**190**	**1120**	**118**	**55**	**275**	**28**	**85**	**275**	**30**	**25**	**285**	**30**	**25**	**285**	**30**

C - Other requirements

							year 1						year 2					
			form of teaching				semester 1			semester 2			semester 3			semester 4		
No.	**Module**	**E/C**	**Total**	**L**	**O**	**Total ECTS**	**L**	**O**	**E**	**L**	**O**	**E**	**L**	**O**	**E**	**L**	**O**	**E**
1	English classes	Z	30		30	2		30	2									
	TOTAL C - Other requirements:		**30**	**0**	**30**	**2**	**0**	**30**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	TOTAL:		**1340**	**190**	**1150**	**120**	**360**		**30**	**360**		**30**	**310**		**30**	**310**		**30**
TOTAL							**1340**											

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**	**O**	**ECTS**
Food microbiology and nutritional physiology	C	10	20	4
Genetic and environmental components in human disease	C	10	10	2
GMO – benefits and threats	C	20	10	4
Mechanisms of evolution	C	30		4
Mechanisms of generative propagation of plants	C	15	30	4
Modelling of plant organ growth	C	10	35	4
Nutrigenomics and nutrigenetics	C	25	20	4
Organisms under environmental stress	C	10	20	4
Patch-clamp technique in the study of plant cells	C	5	20	2
Physiological bases for medicament effects	C	15	30	4

optional modules - semester 2

Description:

During the second cycle-studies of biotechnology, students choose optional modules from the list of modules.
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Modules:	**E/C**	**L**	**O**	**ECTS**

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

Optional modules - semester 3 and 4

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**	**O**	**ECTS**

Biological bases for human and animal behavior	C	30	30	6
DNA markers	C	15	45	6
Environmental biotechnology	C	15	45	6
Food microbiology and nutritional physiology	C	10	20	4
Genetic and environmental components in human disease	C	10	10	2
GMO – benefits and threats	C	20	10	4
Histochemical and immunohistochemical techniques	C	10	50	6
Industrial microbiology	C	15	45	6
Mechanisms of evolution	C	30		4
Mechanisms of generative propagation of plants	C	15	30	4
Modelling of plant organ growth	C	10	35	4
Molecular cytogenetics	C	15	55	6
Nutrigenomics and nutrigenetics	C	25	20	4
Organisms under environmental stress	C	10	20	4
Patch-clamp technique in the study of plant cells	C	5	20	2
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Each semester consists of 15 weeks
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Otrzymują:

1. Dział Kształcenia
2. Wydział Biologii i Ochrony Środowiska
3. Dziekanat

..... (pieczęć i podpis Dyrektora Instytutu)

..... (pieczęć i podpis Dziekana)