STUDY CURRICULUM

Field of study: Biotechnology

Course	Number of ECTS credits	Number of hours						asses-ment[3]	Department/Institute
		Total (4+5+6+7+ 8)	Teaching hours			Contact hours	ESW[2]		
			lectures	pract. classes	Others[1]				
1	2	3	4	5	6	7	8	9	10
Semester 1									
Use of microorganisms in biotechnology	4	120	15	30	-	10	65	EX	Department of Soil Science and Microbiology
Industrial applications of cell and tissue cultures	4	120	15	30	-	10	65	EX	Department of Biotechnology and Food Microbiology Department of Biochemistry and Biotechnology
Application of biotechnology in plant breeding	4	120	15	30	-	10	65	EX	Department of Genetics and Plant Breeding
Bioinformatics	3	75	15	15		10	35	EX	Department of Biochemistry and Biotechnology
Data processing and experimental design	4	120	15	30	-	10	65	EX	Department of Mathematical and Statistical Methods
Genetic engineering	6	180	15	60	-	15	90	EX	Department of Biochemistry and Biotechnology
total number of hours – semester 1	**25**	**735**	**90**	**195**	**-**	**65**	**385**		
Semester 2									

Biotechnology in chemical industry and energetics	5	125	30	45	-	10	40	EX	Department of Biotechnology and Food Microbiology
Plant biotechnology	5	125	30	45	-	10	40	EX	Department of Biochemistry and Biotechnology
Cytogenetics and chromosome engineering	5	140	30	60	-	10	40	EX	Department of Genetics and Plant Breeding Department of Genetics and Animal Breeding
Economic and legal aspects of the company's activities	5	125	30	-	-	15	80	EX	Department of Law and Organization of Agribusiness Enterprises
Subjects selected by students I	6	150	30	30	-	20	70	GA	Department of Biotechnology and Food Microbiology Department of Genetics and Animal Breeding Department of Biochemistry and Biotechnology
Seminar	2	50	-	15	-	10	25	GA	Department of Genetics and Animal Breeding
M.Sc. Laboratory I	3	75	-	-	-	65	10	GA	UPP departments and other research and scientific units
total number of hours – semester 2	**31**	**790**	**150**	**195**	**-**	**140**	**305**		
Semester 3									
Gene expression and regulation	4	100	10	15	-	10	65	EX	Department of Biochemistry and Biotechnology
Applied ecology and biotechnology in environment protection	5	125	30	20	10	15	50	EX	Department of Ecology and Environmental Protection Department of Biotechnology and Food Microbiology

Subject selected by students II	3	85	15	15	-	15	40	EX	Department of Soil Science and Microbiology Department of Genetics and Plant Breeding
Group of subjects selected by students III	7	175	10	50	-	25	90	EX	Department of Mathematical and Statistical Methods
M. Sc. Seminar I (selected by students)	6	150	-	30	-	15	105	GA	Department of Biotechnology and Food Microbiology Department of Biochemistry and Biotechnology
M.Sc. Laboratory II	5	125	-	-	-	75	50	GA	UPP departments and other research and scientific units
total number of hours – semester 3	**30**	**760**	**65**	**130**	**10**	**155**	**400**		
Semester 4									
Molecular diagnostics	4	100	15	30		15	40	EX	Department of Biochemistry and Biotechnology
Genetic diseases of domestic animals	3	75	15	15		15	30	EX	Department of Genetics and Animal Breeding
Subjects selected by students IV	6	150	30	30	-	20	70	EX	Department of Biochemistry and Biotechnology Department of Law and Enterprise Management in Agribusiness Department of Genetics and Animal Breeding
M. Sc. Seminar II (selected by students)	6	150	-	30	-	20	100	GA	Department of Biotechnology and Food Microbiology Department of Biochemistry and Biotechnology

M.Sc. Laboratory III	12	300	-	-	-	120	180	EX	UPP departments and other research and scientific units
total number of hours – semester 4	**31**	**775**	**60**	**105**		**190**	**420**		
total for studies (four semesters)	117	**3060**	**365**	**625**	10	**550**	**1510**		

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			lectures	pract. classes	Others[1]				
1	2	3	4	5	6	7	8	9	10
Subjects selected by students I (semester 2)									
Recent advances in biotechnology - Industrial biotechnology	3	75	15	15	-	10	35	GA	Department of Biotechnology and Food Microbiology
Recent advances in biotechnology - Animal biotechnology	3	75	15	15	-	10	35	GA	Department of Genetics and Animal Breeding
Recent advances in biotechnology - Plant biotechnology	3	75	15	15	-	10	35	GA	Department of Biochemistry and Biotechnology
Recent advances in biotechnology - Molecular diagnostics	3	75	15	15	-	10	35	GA	Department of Biochemistry and Biotechnology
Students choose two of four optional subjects, the subject will be launched if at least seven students choose it (6 ECTS)									

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		Total (4+5+6+7+8)	Teaching hours			Contact hours	ESW[2]		
			lectures	pract. classes	Others[1]				

1	2	3	4	5	6	7	8	9	10
Subject selected by students II (semester 3)									
Modern aspects of agricultural microbiology	3	85	15	15	-	15	40	EX	Department of Soil Science and Microbiology
Environmental microbiology	3	85	15	15	-	15	40	EX	Department of Soil Science and Microbiology
In vitro cultures in crop improvement	3	85	15	15	-	15	40	EX	Department of Genetics and Plant Breeding
Students choose one of three optional subjects, the subject will be launched if at least seven students choose it (3 ECTS)									

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		Total (4+5+6+7+8)	Teaching hours			Contact hours	ESW[2]		
			lectures	pract. classes	Others[1]				
1	2	3	4	5	6	7	8	9	10
Groups of subjects selected by students III (semester 3)									
Introduction to R I RNA-seq data analysis in R I	7	175	 10	20 30	- -	10 15	45 45	EX	Department of Mathematical and Statistical Methods
Introduction to R II RNA-seq data analysis in R II	7	175	 10	40 10	- -	15 10	45 45	EX	Department of Mathematical and Statistical Methods
Students choose one of two optional groups of subjects, the group of subjects will be launched if at least seven students choose it (7 ECTS)									

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		Total (4+5+6+7+8)	Teaching hours			Contact hours	ESW[2]		
			lectures	pract. classes	Others[1]				

1	2	3	4	5	6	7	8	9	10
Subjects selected by students IV (semester 4)									
Immunology	3	75	15	15	-	10	35	EX	Department of Biochemistry and Biotechnology
Basics of neuropsychology	3	75	15	15	-	10	35	EX	Department of Law and Enterprise Management in Agribusiness
Epigenetics	3	75	15	15	-	10	35	EX	Department of Genetics and Animal Breeding
Students choose two of three optional subjects, the subject will be launched if at least seven students choose it (6 ECTS)									

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		Total (4+5+6+7+8)	Teaching hours			Contact hours	ESW[2]		
			lectures	pract. classes	Others[1]				
1	2	3	4	5	6	7	8	9	10
M. Sc. Seminar I									
M. Sc. Seminar I Biotechnology and food microbiology	6	150	-	30	-	15	105	GA	Department of Biotechnology and Food Microbiology
M. Sc. Seminar I Animal biotechnology	6	150	-	30	-	15	105	GA	Department of Genetics and Animal Breeding
Students choose one of two M.Sc. Seminars, the seminar will be launched if at least seven students choose it (6 ECTS)									

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			Teaching hours		ESW[2]		

		Total (4+5+6+7+ 8)	lectures	pract. classes	Others[1]	Contact hours			
1	2	3	4	5	6	7	8	9	10
M. Sc. Seminar II									
M. Sc. Seminar II Molecular diagnostics	6	150	-	30	-	15	105	GA	Department of Biochemistry and Biotechnology
M. Sc. Seminar II Plant biotechnology	6	150	-	30	-	15	105	GA	Department of Biochemistry and Biotechnology
Students choose one of two M.Sc. Seminars, the seminar will be launched if at least seven students choose it (6 ECTS)									

1 - any activities other than laboratory or design classes (e.g. site visits, case study visits, excursions and others)
2 - ESW - estimated number of student work hours
3 – assessment - EX – exam, GA – graded assignment.