## STUDY CURRICULUM

Field of study: Biotechnology

	Number			Number of	hours			asses-				
Course	Number of ECTS	Total	Tea	aching hou	rs	Contact		ment <sup>3</sup>	Department/Institute			
	credits	(4+5+6+7+ 8)	lectures	pract. classes	Others <sup>1</sup>	hours	ESW <sup>2</sup>					
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	ı	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 Genetics and Animal Breeding
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
	6	150	30	30	-	20	70	EX	Department of Biochemistry and Biotechnology
Subjects selected by students IV									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 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	

	Nonebas			Number of	hours			asses-		
Course	Number of ECTS	Total	Tea	aching hou	rs	Contact		ment <sup>3</sup>	Department/Institute	
	credits	(4+5+6+7+ 8)	lectures	pract. classes	Others <sup>1</sup>	hours	ESW <sup>2</sup>			
1	2	3	4	5	6	7	8	9	10	
Subjects selected by students I (sen	nester 2)	<u> </u>	ı	1		<u> </u>		1		
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)										

	Number			Number of	hours			asses- ment <sup>3</sup>	
Course	Number of ECTS	Total			hing hours		2	ment	Department/Institute
	credits	(4+5+6+7+ 8)	lectures	pract. classes	Others <sup>1</sup>	Contact hours	ESW <sup>2</sup>		
1	2	3	4	5	6	7	8	9	10
Subject selected by students II (sem	ester 3)								

Modern aspects of agricultural	3	85	15	15	-	15	40	EX	Department of Soil Science and	
microbiology									Microbiology	
Environmental microbiology	3	85	15	15	-	15	40	EX	Department of Soil Science and	
									Microbiology	
In vitro cultures in crop	3	85	15	15	-	15	40	EX	Department of Genetics and	
improvement									Plant Breeding	
Students choose one of three entired subjects the subject will be learned if at least seven students choose it (3 FCTS)										

Students choose one of three optional subjects, the subject will be launched if at least seven students choose it (3 ECTS)

Nun				Number of	hours			asses- ment <sup>3</sup>			
Course	Number of ECTS	Total	Teaching hours			Contact		ment	Department/Institute		
	credits	(4+5+6+7+ 8)	lectures	pract. classes	Others <sup>1</sup>	hours	ESW <sup>2</sup>				
1	2	3	4	5	6	7	8	9	10		
Groups of subjects selected by students III (semester 3)											
Introduction to R I.	7	175		20	-	10	45	EX	Department of Mathematical and		
RNA-seq data analysis in R I			10	30	-	15	45		Statistical Methods		
Introduction to R II.	7	175		40	-	15	45	EX	Department of Mathematical and		
RNA-seq data analysis in R II			10	10	-	10	45		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)											

		Number			Number of	hours			asses- ment <sup>3</sup>	
	Course	of ECTS	Total			ning hours			ment	Department/Institute
		credits	(4+5+6+7+ 8)	lectures	pract. classes	Others <sup>1</sup>	Contact hours	ESW <sup>2</sup>		
	1	2	3	4	5	6	7	8	9	10
Sı	ıbjects selected by students IV (se	mester 4)								

Immunology	3	75	15	15	-	10	35	EX	Department of Biochemistry and	
Immunology									Biotechnology	
	3	75	15	15	-	10	35	EX	Department of Law and	
Basics of neuropsychology									Enterprise Management	
									in Agribusiness	
Epigenetics	3	75	15	15	-	10	35	EX	Department of Genetics and	
Epigenetics									Animal Breeding	
Students change two of three entired subjects, the subject will be learneded if at least seven students change it (6 ECTS)										

Students choose two of three optional subjects, the subject will be launched if at least seven students choose it (6 ECTS)

	Alama Ia an			Number of	hours		asses-		
Course	Number of ECTS	Total	Tea	Teaching hours				ment <sup>3</sup>	Department/Institute
	credits	(4+5+6+7+ 8)	lectures	pract. classes	Others <sup>1</sup>	Contact hours	ESW <sup>2</sup>		
1	2	3	4	5	6	7	8	9	10
M. Sc. Seminar I	•	1				1			
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

asses-Number of hours ment<sup>3</sup> Number Total Teaching hours Course of ECTS Department/Institute Contact (4+5+6+7+ ESW<sup>2</sup> credits pract. hours Others<sup>1</sup> lectures 8) classes 9 1 2 3 4 5 6 7 8 10

M. Sc. Seminar II										
M. Sc. Seminar II. Molecular	6	150	-	30	-	15	105	GA	Department of Biochemistry and	
diagnostics									Biotechnology	
M. Sc. Seminar II. Plant	6	150	-	30	-	15	105	GA	Department of Biochemistry and	
biotechnology									Biotechnology	
Students choose one of two M Sc. Seminars, the seminar will be launched if at least seven students choose it (6 FCTS)										

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.