DEPARTMENT OF FOOD TECHNOLOGY AND PROCESSING OF ANIMAL PRODUCTS

Study programme: Processing and control of animal products

DIPLOMA: MASTER OF AGRICULTURAL SCIENCES

CODE	I SEMESTER – FIRST YEAR			
	Compulsory course	**Credits**	**Classes**	**Total**
2ZF230112	Methods in scientific research work	8	3+2+2	216
2ZF210112	Biochemistry of meat	8	3+2+2	216
2ZF230212	Biostatistics	6	2+2+1	156
	Faculty elective course	4	2+1+1	120
	Faculty elective course	4	2+1+1	120
Total:		30	12+8+7	828

CODE	II SEMESTER – FIRST YEAR			
	Compulsory course	**Credits**	**Classes**	**Total**
2ZF210212	Fermented meat products	8	3+2+2	216
2ZF210312	Meat production	8	3+2+2	216
2ZF210412	Machines in the industry for animal products	6	2+2+1	156
	Faculty elective course	4	2+1+1	120
	Faculty elective course	4	2+1+1	120
	Total:	30	12+8+7	828

CODE	III SEMESTER – SECOND YEAR			
	Compulsory course	**Credits**	**Classes**	**Total**
2ZF210512	Production of finished dishes of meat	8	3+2+2	216
2ZF210612	Food safety	8	3+2+2	216
2ZF201612	Diseases and pests of field crops	8	2+2+1	156
	University elective course	6	2+2+1	156
	Total:	30	11+8+7	804

CODE	IV SEMESTER – SECOND YEAR			
	Compulsory course	**Credits**	**Classes**	**Total**
	Master thesis	30	0+0+26	818
	Total:	30	0+0+26	818

CODE	***Faculty elective course I semester***			
2ZF210712	Control of animal products	4	2+1+1	120
2ZF210812	Production and knowledge of milk	4	2+1+1	120
2ZF210912	Organic production of animal products	4	2+1+1	120
2ZF205112	Boiled and semi permanent products of meat	4	2+1+1	120
	Faculty elective course II semester			
2ZF211012	Meat canning	4	2+1+1	120
2ZF211112	Milk and fermented dairy products	4	2+1+1	120

2ZF211212	Fundamentals of management	4	2+1+1	120
2ZF211312	Growing of species, aromatic and medical herbs	4	2+1+1	120

Appendix No.3	**Syllabus for the first, second and third cycle of study**				
1.	**Course title**	**METHODS IN SCIENTIFIC RESEARCH WORK**			
2.	**Course code**	**2ZF230112**			
3.	**Study programme**	Processing and control of animal products			
4.	**Organizer of the study programme (faculty, institute, group)**	Department of food technology and processing of animal products, Faculty of Agriculture, University “Goce Delcev”- Stip			
5.	**Level (first, second, third cycle)**	Second cycle			
6.	**Academic year / semester**	First year / I semester	7.	Number of ECTS credits	8
8.	**Professor**	**Prof. Ilija Karov PhD**			
9.	**Preconditions for course enrollment**	No			
10.	**Goals of the course programme:** Introduction to the basic rules and principles in science, the scientific research methods and characteristics that should possess the scientific worker.				
11.	**Content of the course programme:** **Content of lectures:** 1. Importance of scientific research 2. Selection of topic for scientific work, 3. Methodology of research 4. Literature and working hypothesis 5. Planning of experiment 6. Conducting of the experiment 7. Methodology and experimental technique of field experiment 8. An overview of important procedures in the experimental technique 9. Methodology and technique of conducting experiments in containers 10. Processing and displaying the results 11. Technique of writing master's, specialist and scientific papers and citing the literature 12. Preparation of a scientific paper for printing. **Content of exercises**: 1. Introduction 2. Setting the hypothesis 3. Studying the literature 4. Performing of experiment 5. Field trials 6. Laboratory experiments 7. Experiment in containers 8. Processing of the experimental results 9. Displaying obtained results 10. Literature citation, 11. Writing a scientific paper 12. Presenting a scientific paper.				
12.	**Methods of study:** lectures, theoretical and practical exercises, consultations, independent paper work, home learning, preparatory classes for exams and mid-term tests, consultations.				
13.	**Total amount of available time**	216 hours			
14.	**Distribution of the available time**	3+2+2			
15.	**Forms of teaching activities**	15.1.	Lectures - theoretical training	3	
		15.2.	Exercises (laboratory, auditory), workshops, outreach and teamwork	2	
16.	**Other forms of activities**	16.1.	Team projects	1	
		16.2.	Individual projects	1	
		16.3.	Individual study		
17.	**Forms of assessment**				

	17.1.	Exams (midterm exams, exam, electronic testing)	30	
	17.2.	Project activities (oral and written presentation)	50	
	17.3.	Other forms of studying activities	20	
18.	**Criteria for assessment (points / grade)**	to 50 points	5 (five)	(F)
		from 51 to 60 points	6 (six)	(E)
		from 61 to 70 points	7 (seven)	(D)
		from 71 to 80 points	8 (eight)	(C)
		from 81 to 90 points	9 (nine)	(B)
		from 91 to 100 points	10 (ten)	(A)
19.	**Condition for getting a signature and taking the final exam**	60% of term activities, project activities and attending to lectures and discussions		
20.	**Language in which classes are conducted**	Macedonian		
21.	**Method of monitoring the quality of instruction**	Self-evaluation		

22. **Literature**

Compulsory literature

	Ordinal No.	Author	Title	Publisher	Year
22.1.	1.	Проф. д-р. Илија Каров, Асс. Билјана Ковачевиќ	Методи на научно истражувачката работа (скрипта)	УГД-Штип	2010
	2.	Ketryn L. Allen	Study skills. A student survival guide. (translation of the Macedonian language)	Goce Delcev University, Stip	2010

Additional literature

	Ordinal No.	Author	Title	Publisher	Year
22.2.	1.	Dr. Slavko Borojevic	Metodologija eksperimentalnog naucnog rada	Radnicki Univerzitet “Radivoj Cirpanov“	1974

Appendix No.3	**Syllabus for the first, second and third cycle of study**	
1.	**Course title**	**Biochemistry of meat**
2.	**Course code**	2ZF221012
3.	**Study programme**	Processing and controlling of animal products
4.	**Organizer of the study programme (faculty, institute, group)**	Department of food technology and processing of animal products, Faculty of Agriculture, University “Goce Delcev”- Stip
5.	**Level (first, second, third cycle)**	Second cycle

6.	**Academic year / semester**	First year/ second semester	7.	Number of ECTS credits	8
8.	**Professor**	Prof. Rubin Gulaboski, PhD, Prof. Liljana Koleva-Gudeva, PhD			
9.	**Preconditions for course enrollment**	No			
10.	**Goals of the course programme**: Students are introduced to the basics of meat biochemistry				
11.	**Content of the course programme**: ***Lectures***: 1. Introduction to biochemistry; Basic organic compounds-a short overview; 2. Chemical structure of the meat; 3. Mineral matters and water in the meat; 4. Lipids in the meat; 5. Carbohydrates in the meat; 6. Amino acids and proteins present in the meat; 8. Post-mortal changes in the meat; 9. Chemical processes in the meat after slaughtering of the animals; 10. Nucleic acids; 11. Methabolitic pathways in the meat; 12. Toxins in the meat. ***Practices***: 1. Introduction; 2. Methods for determination of functional groups; 3. Determination of water in meat; 4. Carbohydrates-chemical properties; 5. Determination of lipids in meat; 6. Chromatographic determination of proteins in meat; 7. Determination of enzyme activities; 8. Kinetics of enzymatic reactions; 9. Electrophoresis: 10. Determination of secondary metabolites in meat; 11. Determination of ATP in meat; 12. Determination of vitamins in meat;				
12.	**Methods of study**: Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.				
13.	**Total amount of available time**	216 hours			
14.	**Distribution of the available time**	3+2+2+			
15.	**Forms of teaching activities**	15.1.	Lectures - theoretical training	3 classes weekly	
		15.2.	Exercises (laboratory, auditory), workshops, outreach and teamwork	2 classes weekly	
16.	**Other forms of activities**	16.1.	Team projects	1 class weekly	
		16.2.	Individual projects	1 class weekly	
		16.3.	Individual study		
17.	**Forms of assessment**				
	17.1.	Exams (midterm exams, exam, electronic testing)		30	
	17.2.	Project activities (oral and written presentation)		50	
	17.3.	Other forms of studying activities		20	
18.	**Criteria for assessment (points / grade)**	up to 50 points	5(five) (F)		
		from 51 to 60 points	6(six) (E)		
		from 61 to 70 points	7(seven) (D)		
		from 71 to 80 points	8(eight) (C)		

		from 81 to 90 points	9(nine) (B)
		from 91 to 100 points	10(ten) (A)
19.	**Condition for getting a signature and taking the final exam**	60% of term activities, project activities and attending to lectures and discussions	
20.	**Language in which classes are conducted**	Macedonian	
21.	**Method of monitoring the quality of instruction**	Self-evaluation, anonym polls	

22. Literature

Compulsory literature

Ordinal No.	Author	Title	Publisher	Year
22.1. 1.	Rubin Gulaboski, Liljana Koleva-Gudeva	Biochemistry, manuscript for the students of Goce Delcev University-Stip, available in free form at www.rubingulaboski.synthasite.com	Rubin Gulaboski, Liljana Koleva-Gudeva	Biochemistry, manuscript for the students of Goce Delcev University-Stip, available in free form at www.rubingulaboski.synthasite.com
2.	Devlin, T.	Textbook of biochemistry with clinical correlations, 4th ed	Wiley & Sons inc. pub.New York	1997
3.				

Additional literature

Ordinal No.	Author	Title	Publisher	Year
22.2. 1.	Rubin Gulaboski	Authorized lectures in ppt format, available in free format on www.rubingulaboski.synthasite.com	UGD	2010
2.	Rubin Gulaboski, Liljana Koleva-Gudeva	Biochemistry, manuscript for the students of Goce Delcev University-Stip, available in free form at www.rubingulaboski.synthasite.com	UGD	2010
3.	J. Mc Mury	Organic Chemistry	Willey	2010

Appendix No.3	**Syllabus for the first, second and third cycle of study**					
1.	**Course title**	**BIOSTATISTICS**				
2.	**Course code**	**2ZF230212**				
3.	**Study programme:**	**Processing and controlling of animal products**				
4.	**Organizer of the study programme (faculty, institute, group)**	Department of food technology and processing of animal products, Faculty of Agriculture, University “Goce Delcev”- Stip				
5.	**Level (first, second, third cycle)**	Second cycle				
6.	**Academic year / semester**	Second year/ first semester	7.	**Number of ECTS credits**	6	
8.	**Instructor**	**Prof. Tatjana Atanasova Pacemska, PhD**				
9.	**Preconditions for course enrollment**					
10.	**Goals of the course programme**: Getting more detailed knowledge for the use of statistical methods in agricultural practice					
11.	**Content of the course programme**: **Content of lectures:** 1. Introduction to statistics (mathematics and statistics science) 2. Basic statistical techniques 3. Types of statistical methods 4. Data processing 5. Statistics, variability and distribution 6. Discrete equal distribution. 7. Elements of statistical conclusion. 8. T test and F test 9. Analysis of variance (ANOVA) 10. Factorial experiment, two factorial experiment 11. Linear regression and correlation 12. Experimental Design - practical application of methods in agricultural research. **Content of exercises:** 1. Mathematics and statistics science 2. The use of basic statistical techniques 3. Types of statistical methods 4. Practical ways of data processing 5. Statistics, variability and distribution 6. Discrete equal distribution. 7. Elements of statistical conclusion. 8. T test and F test 9. Analysis of variance (ANOVA) 10. Factorial experiment, two factorial experiment 11. Linear regression and correlation 12. Experimental Design - practical application of methods in agricultural research.					
12.	**Methods of study**: Lectures, theoretical and practice exercises, consultations; individual work; home learning; preparatory classes for exams and mid-term tests: consultation;					
13.	**Total amount of available time**	156 hours				
14.	**Distribution of the available time**	2+2+1				
15.	**Forms of teaching activities**	15.1.	Lectures - theoretical training	2		
		15.2.	Exercises (laboratory, auditory), workshops, outreach and teamwork	2		
16.	**Other forms of activities**	16.1.	Team projects	1		
		16.2.	Individual projects	-		
		16.3.	Individual study	-		
17.	**Forms of assessment**					
	17.1.	Exams (midterm exams, exam, electronic testing)	30			
	17.2.	Project activities (oral and written presentation)	50			
	17.3.	Other forms of studying activities	20			

18.	**Criteria for assessment (points / grade)**		to 50 points	5 (five) (F)
			from 51 to 60 points	6 (six) (E)
			from 61 to 70 points	7 (seven) (D)
			from 71 to 80 points	8 (eight) (C)
			from 81 to 90 points	9 (nine) (B)
			from 91 to 100 points	10 (ten) (A)
19.	**Condition for getting a signature and taking the final exam**		60% of term activities	
20.	**Language in which classes are conducted**		Macedonian	
21.	**Method of monitoring the quality of instruction**		Self-evaluation	
22.	**Literature**			
	22.1.	**Compulsory literature**		
		Ordinal No.	Author	Title	Publisher	Year
		1.	Graham Currell, Antony Dowman	Essential mathematics and statistics for science		2009
		2.	Nelmut van Emden	Statistics for terrified biologists		2008
		3.	Calvin Dytham	Choosing and Using Statistics		2003

Appendix No.3	**Syllabus for the first, second and third cycle of study**				
1.	Course title	**CONTROL OF ANIMAL PRODUCTS**			
2.	Course code	2ZF221512			
3.	Study programme	Processing and control of animal products			
4.	Organizer of the study programme (faculty, institute, group)	University “Goce Delčev” – Štup, Faculty of Agriculture, Department of food technology and processing of animal products			
5.	Level (first, second, third cycle)	Second cycle			
6.	Academic year / semester	First year/ first semester	7.	Number of ECTS credits	4
8.	Professor	Assistant Professor Violeta Ivanova-Petropulos, PhD Prof. Trajce Presilski, PhD			
9.	Preconditions for course enrollment	/			
10.	**Goals of the course programme**: Acquiring knowledge and skills for the chemical and microbiological methods for control of various compounds and microorganisms in foods of animal origin.				
11.	**Content of the course programme:**				

	A) Content of lectures: 1. Introduction; 2. Characteristics of the basic quality factors; 3. Definition of quality control, standards, measurements; 4. Sampling of meat and meat products for analysis; 5. Sampling milk and and milk products for analysis; 6. Determination of water in food, water properties, chemical and physical methods, determination of minerals; 7. Properties of carbohydrates (sugars), Chemical methods for determination of carbohydrates in foods; 8. Properties of lipids, Methods for determination of lipids; 9. Proteins, properties, Methods for determination of proteins; 10. Instrumental methods of analysis of the main ingredients in the food-HPLC, GC and AAS; 11. Microbiological analysis of animal products; 12. Sensory analysis of animal products. **B) Content of exercises**: 1. Introduction to laboratory analysis of food; 2. Determination of total moisture content and content of mineral substances in food using drying methods; 3. Polarimetric determination of carbohydrates in foods; 4. Determination of total content of lipids in food using extraction methods; 5. Determination of proteins in food with Kjeldahl method; 6. Application of liquid chromatography for determination of polyphenols in food; 7. Qualitative bacteriological examination of animal products; 8. Quantitative bacteriological examination of animal products; 9. Sensory analysis - types of sensory analysis; 10. Conditions for sensory analysis; 11. Methods of sensory analysis; 12. Penel test - a practical example.			
12.	**Methods of study**: Lectures and laboratory exercises, consultations, individual and team projects; e-learning.			
13.	**Total amount of available time**		120	
14.	**Distribution of the available time**		2+1+1	
15.	**Forms of teaching activities**	15.1.	Lectures - theoretical training	2
		15.2.	Exercises (laboratory, auditory), workshops, outreach and teamwork	1
16.	**Other forms of activities**	16.1.	Team projects	-
		16.2.	Individual projects	0.5
		16.3.	Individual study	0.5
17.	**Forms of assessment**			
	17.1.	Exams (midterm exams, exam, electronic testing)		70
	17. 2	Project activities (oral and written presentation)		10
	17.3.	Other forms of studying activities		20
18.	**Criteria for assessment (points / grade)**	to 50 points	5 (five)	(F)
		from 51 to 60 points	6 (six)	(E)

		from 61 to 70 points	7 (seven)	(D)
		from 71 to 80 points	8 (eight)	(C)
		from 81 to 90 points	9 (nine)	(B)
		from 91 to 100 points	10 (ten)	(A)
19.	**Condition for getting a signature and taking the final exam**	60% of term activities, project activities and attending to lectures and discussions		
20.	**Language in which classes are conducted**	Macedonian		
21.	**Method of monitoring the quality of instruction**	Self-evaluation		

22.	**Literature**					
		Compulsory literature				
		Ordinal No.	Author	Title	Publisher	Year
	22.1.	1.	Semih Otles	Handbook of Food Analysis Instruments	CRC Press	2008
		2.	Violeta Ivanova-Petropulos	Authorized lectures of Control of animal products, for the students at Faculty of Agriculture	UGD - Stip	2012
		Additional literature				
		Ordinal No.	Author	Title	Publisher	Year
	22.2.	1.	Borislav Gingleski	Meat and meat products	Ss. Cyril and Methodius University, Skopje	1985
		2.	M. Karic, S. Milanovic, D. Vukela	Standard methods for analysis of milk and milk products	Faculty of Technology, Novi Sad	2005

Appendix No.3	**Syllabus for the first, second and third cycle of study**	
1.	Course title	**Production and composition of milk**
2.	Course code	2ZF221612
3.	Study programme	Module: Processing of Animal Products

4.	Organizer of the study programme (faculty, institute, group)	Faculty of Agriculture, Department for Processing of Animal Products				
5.	Level (first, second, third cycle)	Second cycle				
6.	Academic year / semester	First / I	7.	Number of ECTS credits	4	
8.	Professor	Prof. Stevce Presilski, PhD				
9.	Preconditions for course enrollment	Knowledge from biology, anatomy, physiology, biochemistry and nutrition of farm animals				
10.	Goals of the course programme: The course programme aims to introduce students with biosynthesis of milk, factors that determine the quality and ways of milking machines and equipment manipulation milk					
11.	Content of the course programme: **Content of the lectures:** 1. Economic significance of the dairy industry, milk biosynthesis. 2. Colostral and real milk dairy constants, physical chemical, nutritional, immunological and therapeutic technological properties 3. Preparation of workers and animals - milk gland milking, ways of milking, milking vessels, bows cooling and transport of milk. 4. Physical constants of milk, their proof, and traditional active acidity, rapid field titration methods and methods for determining the acidity of milk, taking the median test, preservation and transportation of samples to an independent laboratory 5. Somatic cells, initial strains of bacteria and residues in milk. 6. Concept of bactericidal phase of milk and ways of continuing the same (physical, chemical and biological). 7 Types of milk: from conventional and unconventional sources, such as vegetable and milk with his sensory and physical and chemical characteristics. 8 Primary and secondary processing of milk, procedures and operations. 9. Types of falsification of milk and their ways of proving. 10. Standardization of milk. 11 Methods for determining of freshnes and ways of proving the storage of milk in the chilled condition. 12. anitation containers, machinery, equipment and facilities for manipulation of milk **Content of exercises (practical and laboratory):** Determination of chemical constants of milk (water, dry matter); practical proof of acidity and laboratory determination of acidity of milk; acquaintance with pure cultures and their preparation; field work in an independent laboratory and Institute of Occupational Medicine					
12.	Methods of study: Lectures, Theoretical exercises, Laboratory exercises, E-learning, individual and team projects, consultations for the final exam, Final exam.					
13.	Total amount of available time	120 hours				
14.	Distribution of the available time	2+1+1				
15.	Forms of teaching activities	15.1.	Lectures - theoretical training	2		
		15.2.	Exercises (laboratory, auditory), workshops, outreach and teamwork	1		
16.	Other forms of activities	16.1.	Team projects	0.5		
		16.2.	Individual projects	0.5		
		16.3.	Individual study			
17.	Forms of assessment					
	17.1.	Exams (midterm exams, exam, electronic testing)		30		

	17.2.	Project activities (oral and written presentation)	50
	17.3.	Other forms of studying activities	20
18.	Criteria for assessment (points / grade)	to 50 points	5 (five) (F)
		from 51 to 60 points	6 (six) (E)
		from 61 to 70 points	7 (seven) (D)
		from 71 to 80 points	8 (eight) (C)
		from 81 to 90 points	9 (nine) (B)
		from 91 to 100 points	10 (ten) (A)
19.	Condition for getting a signature and taking the final exam	60% of term activities, project activities and attending to lectures and discussions	
20.	Language in which classes are conducted	Macedonian	
21.	Method of monitoring the quality of instruction	Self-evaluation	

22. Literature

22.1. Compulsory literature

Ordinal No.	Author	Title	Publisher	Year
1.	Stevce Presilski	Milk and fermented dairy products	Faculty of Biotechnical Sciences	2005
2.	Marijana Caric et al.	Standardne metode analize mleka I mlecnih proizvoda	Novi Sad	2000
3	Tratik Ljubica	Mlijeko – tehnologija, biokemija I mikrobiologija	Zagreb	1998

22.2. Additional literature

Ordinal No.	Author	Title	Publisher	Year
1.	Petricic Ante	Konzumno I fermentirano mleko	Zagreb	1984
2	Petricic Ante, Tratik Ljubica	Vrste mlijeka, vrste proizvoda I tehnoloske procese	Zagreb	1996

Appendix No.3	**Subject programme from the first, second and third cycle of studies.**	
1.	Title of courses	**Organic Production of Animal Products.**
2.	Code	2ZF221712
3.	Study programme	Module: Processing of Animal Products – four year studies
4.	Organizer of the study programme (unit or	Faculty of Agriculture, Department for Processing of Animal Products

	institute, department, division)				
5.	Degree (first, second and third cycle)	Second cycle			
6.	Academic year / semester	First / second	7.	Number of ECTS credits	4

8.	Professor			Doc. Darko ANDRONIKOV, PhD
9.	Preconditions for course enrollment			
10.	Goals of the study programme: Students gain understanding, knowledge and skills for application of techniques for the production of organic animal products. Gain skills for specific conversion, certification and organic production of animal products based on the law and current regulations in the country concerning the production of animal products.			
11.	Content of the study programme: ***A) Content of lectures:*** 1. Introduction in organic production of animal products, 2. Terms of organic production of animal product, 3. Organic production of feed, 4. Farms raising animals for commercial production of organic animal products, 5. Growing of economic life in producing organic products, 6. Care of animals for commercial organic production, 7. Organic meat, milk, eggs, fish, etc., 8. Composition and properties of organic animal products, 9. Conditions for processing of organic animal products, 10. Organic additives in the processing of animal products, 11. Animal products of organic origin, 12. Control of organic products of animal origin. ***B) Content of exercises:*** 1. Introduction in organic production of animal products, 2. Terms of organic production of animal product, 3. Organic production of feed, 4. Farms raising animals for commercial production of organic animal products, 5. Growing of economic life in producing organic products, 6. Care of animals for commercial organic production, 7. Organic meat, milk, eggs, fish, etc., 8. Composition and properties of organic animal products, 9. Catch the processing of organic animal products, 10. Organic additives in the processing of animal products, 11. Animal products of organic origin, 12. Control of organic products of animal origin.			
12.	Methods of study: lectures, theoretical and practical exercises, consultations, making independent paper work, home learning, preparatory classes for exams and mid-term tests: consultations.			
13.	Total amount of available time		**120**	
14.	Distribution of available time		**2+1+1**	
15.	Forms of teaching activities	15.1. Lectures - theoretical lectures		2 hours per week
		15.2. Exercises (laboratory, public), seminars, teamwork		1 hour per week

16.	Other forms of activities	16.1.	Project work	0,5 hour per week
		16.2.	Individual work	/
		16.3.	Home learning	0,5 hour per week

17.	Forms of assessment		
	17.1.	Project work	30 points
	17.2.	Project work (presentation: written and oral)	50 points
	17.3.	Activity and participation	20 points

18.	Criteria for assessment (points/ grade),	to 50 points	5 (five) F
		from 51 to 60 points	6 (six) E
		from 61 to 70 points	7 (seven) D
		from 71 to 80 points	8 (eight) C
		from 81 to 90 points	9 (nine) B
		from 91 to 100 points	10 (ten) A

19.	Condition for getting a signature and taking the final exam	60% success of all activities before exam
20.	Language in which classes are conducted	Macedonian
21.	Method of monitoring the quality of teaching	Only assessment

22. Literature

Compulsory literature

	Ordinal number	Author	Title	Publisher Year
22.1.	1.	Veladžič M, Čaklavica F. Fejzič N.	Organska proizvodnja hrane	IK >>Liljan<< Sarajevo 2003
	2.	ИФОАМ	Основни стандарди за органско производство и преработка .	Генерално собрание на ИФОАМ, Базел, Швајцарија 2006

Attachment No.3	**Subject programme from the first, second and third cycle of studies.**	
1.	**Course title**	**Boiled and semi permanent products of meat.**
2.	Code	2ZF221812
3.	Study programme	Module: Processing of Animal Products – four year studies

4.	Organizer of the study programme (unit or institute, department, division)	Faculty of Agriculture, Department for Processing of Animal Products			
5.	Level (first, second and third cycle)	Second cycle			
6.	Academic year / semester	First / second	7.	Number of ECTS credits	4

8.	**Professor**	Doc. Darko ANDRONIKOV, PhD	
9.	**Preconditions for course enrollment**	/	
10.	**Goals of the course programme:** Students become familiar with the production of boiled and semi permanent products of meat.		
11.	***The content of the course programme:*** ***A) Content of lectures:*** 1. Introduction. 2. Materials for production of boiled meat and semi permanent sausage. 3. Processing and use of pork skins in production of boiled meat sausage. 4. Manufacturing of meat batter of warm and cool meat. 5. The ability of meat to bind water and other factors. 6. Additives and supplements in the production of boiled and smoked sausage. 7. Smoke and smoking the boiled meat and semi permanent sausage. 8. Errors in production of boiled sausages. 9. Technological procedures for the semi permanent sausages. 10. Types of boiled meat sausages. 11. Types of smoked sausages. 12. Errors in the semi permanent sausages. ***B) Content of exercises:*** 1. Introduction. 2. Materials for production of boiled meat and semi permanent sausage. 3. Processing and use of pork skins in production of boiled meat sausage. 4. Manufacturing of meat batter of warm and cool meat. 5. The ability of meat to bind water and other factors. 6. Additives and supplements in the production of boiled and smoked sausage. 7. Smoke and smoking the boiled meat and semi permanent sausage. 8. Errors in production of boiled sausages. 9. Technological procedures for the semi permanent sausages. 10. Types of boiled meat sausages. 11. Types of smoked sausages. 12. Errors in the semi permanent sausages.		
12.	**Methods of study:** lectures, theoretical and practical exercises, consultations, making independent paper work, home learning, preparatory classes for exams and mid-term tests: consultations. Total time available.		

13.	**Total amount of available**	156 часови	**156 hours**

14.	**Distribution of available time**	2+2+1		**2+2+1**	
15.	**Forms of teaching activities**		15.1.	Lectures - theoretical lectures	2 hours per week
			15.2.	Exercises (laboratory, public), seminars, teamwork	1 hour per week
16.	**Other forms of activities**		16.1.	Project work	0,5 hour per week
			16.2.	Individual work	/
			16.3.	Home learning	0,5 hour per week

17.	Forms of assessment		
	17.1.	Project work	30 points
	17.2.	Project work (presentation: written and oral)	50 points
	17.3.	Activity and participation	20 points

18.	Criteria for assessment (points/ grade),	to 50 points	5 (five) F
		from 51 to 60 points	6 (six) E
		from 61 to 70 points	7 (seven) D
		from 71 to 80 points	8 (eight) C
		from 81 to 90 points	9 (nine) B
		from 91 to 100 points	10 (ten) A

19.	Condition for getting a signature and taking the final exam	60% success of all activities before exam
20.	Language in which classes are conducted	Macedonian
21.	Method of monitoring the quality of teaching	Only assessment

22. Literature

22.1. Compulsory literature

Ordinal number	Author	Title	Publisher	Year
1.	Проф. Д-р. Митре Стојановски	Обработка на месо- скрипта за интерна употреба	Универзитет Свети Климент Охритски Битола Факултет за биотехнички науки Битола	
2.				
3.				

22.2. Compulsory literature

		Ordinal number	Author	Title	Publisher	Year
		1.	Петар Радетич	Барене кобасице	Белград 2000	
		2.	Светомир Рахелич, Јарослав Јоксимович,Франц Бучар	Технологија прераде меса	Технолошки факултет Нови Сад 1980	
		3.				

Appendix No. 3	**Subject programme first, second and third cycle studies**				
1.	**Title of courses**	**FERMENTED MEATPRODUCTS**			
2.	**code**	2ZF221112			
3.	**Study programme**	Module processing and animal products			
4.	**Organizer of the study programme(unit or institute ,department division)**	Faculty of Agriculture , department of technology and processing of animal products			
5.	**Level (first, second, third cycle)**	Second cycle			
6.	**Academic year / semester**	First year/second semester	7.	Number of ECTS credits	8
8.	**Professor**	Prof. Aco Kuzelov, PhD			
9.	**Preconditions for course enrollment**	/			
10.	**Goals of the study programme:**Students become familiar with the production of fermented meat products				
11.	***Content of the study programme:*** ***A).Content of lectures .*** 1. Introduction 2. Internal parameters of maturing 3. Manufacturing of fermented sausages nadevot the fourth Supplements and additives 5. Charge of fermented sausages 6. External parameters of ripening and drying of fermented sausages 7. Ripening of raw sausages 8. Starter and protective cultures ninth Technological processes in proizvotstvoto of delicatessen products fermented 10. Errors in proizvotstvto of fermented meat products 11. Fermented sausage typical of some countries in Europe and in our 12. Fermented meat products typical of the Balkans. **Б) Content of exercises**: 1. Introduction 2. Internal parameters of maturing 3. Manufacturing of fermented sausages nadevot the fourth Supplements and additives 5. Charge of fermented sausages 6. External parameters of ripening and drying of fermented sausages 7. Ripening of raw sausages 8. Starter and protective cultures ninth Technological processes in proizvotstvoto of delicatessen products fermented 10. Errors in proizvotstvto of fermented meat products 11. Fermented sausage typical of some countries in Europe and in our 12. Fermented meat products typical of the Balkans				
12.	**Methods of study:** lectures, theoretical and practical exercises, consultations, making independent paper work, home learning, preparatory classes for exams and mid-term tests: consultations.				
13.	**Total amount of available time**	216 hours			
14.	**Distribution of the available time**	3+2+2			

15.	**Forms of teaching activities**	15.1.	Lectures - Theory	3
		15.2.	Exercises (laboratory, auditory), seminars teamwork	2
16.	**Other forms of activites**	16.1.	Proect task s	1
		16.2.	Individual tasks	1
		16.3.	Home learning	.

17.	**Forms of assessment**		
	17.1.	Proect tasks	30 points
	17.2	Working tasks / project (presentation: written and oral)	50 points
	17.3..	Activity and participation	20 points

18.	Criteria for assessment (points / grade)	50 points	5 (five) F
		51 to 60 points	6 (sih) E
		61 to 70 points	7(seven) D
		71 to 80 points	8(eight) C
		81 to 90 points	9(nine) B
		91 to 100 бода	10(ten) A
19.	Condition for getting a signature and taking the final exam	60% 60% success of all activities before exam	
20.	Language in which classes are conducted	Macedonian	
21.	Method of monitoring the quality of teaching	Self-evaluation	

22.	Literature					
	22.1.	Compulsory literature				
		Ordinal Number	Author	Title	publisher	year
		1.	Prof. Mitre Stojanovski, PhD	Meat-processing script for internal use	UKLO Bitola	2001
		2.				
		3.				
	22.2.	Дополнителна литература				
		Ordinal Number	Author	Title	publisher	Year
		1.	Petar Radetic	Raw sausage	Beograd	2000
		2.	Svetomir Rahelic Jaroslav Joksimovic Franc Buchar	Technology of meat	T Faculty of Technology Novi Sad	1980

Appendix No. 3	**Subject programme first, second and third cycle studies**

1.	**Title of courses**	**MEAT PRODUCTION**			
2.	**code**	2ZF221212			
3.	**Study programme**	Module processing and animal products			
4.	**Organizer of the study programme(unit or institute ,department division)**	Faculty of Agriculture , department of technology and processing of animal products			
5.	**Level (first, second, third cycle)**	Second cycle			
6.	**Academic year / semester**	First year/second semester	7.	Number of ECTS credits	8
8.	**Teacher**	Proff. Dr. Aco Kuzelov			
9.	**Preconditions for course enrollment**	/			
10.	**Objectives of the curriculum(competencies):** Students are familiar with operations at the slaughter and primary processing of meat				
11.	***Thw contwent of the curiculum:*** ***A).Contents of lectures .*** 1. Introduction, 2nd Facilities for manufacturing of meat - slaughterhouses 3rd Method and conditions of carriage of livestock fourth Consequences of shipping 5th Unloading and receiving cattle sixth Omamuvanje 7th Bleeding eighth Downloading skin ninth Shurenje 10th Yelling 11th Removing the internal organs 12th Cutting of carcasses, veterinary examination, trimovanje, washing and weighing **Б) Contens of exercises**: 1. Introduction, 2nd Facilities for manufacturing of meat - slaughterhouses 3rd Method and conditions of carriage of livestock fourth Consequences of shipping 5th Unloading and receiving cattle sixth Omamuvanje 7th Bleeding eighth Downloading skin ninth Shurenje 10th Yelling 11th Removing the internal organs 12th Cutting of carcasses, veterinary examination, trimovanje, washing and weighing				
12.	**Methods of study:** lectures, theoretical and practical exercises, consultations, making independent paper work, home learning, preparatory classes for exams and mid-term tests: consultations.				
13.	**Total available fund on time**	216 hours			
14.	**Allocation available time**	3+2+2			
15.	**Forms of teaching activities**	15.1.	Lectures - Theory	3	
		15.2.	Exercises (laboratory, auditory), seminars teamwork	2	
16.	**Other forms of activites**	16.1.	Proect task s	1	
		16.2.	Individual tasks	1	
		16.3.	Home learning	.	

17.	**Forms of assessment**			
	17.1.	Proect tasks		30 points
	17.2	Working tasks / project (presentation: written and oral)		50 points
	17.3..	Activity and participation		20 points
18.	Criteria for assessment (points / grade)		50 points	5 (five) F
			51 to 60 points	6 (sih) E
			61 to 70 points	7(seven) D
			71 to 80 points	8(eight) C
			81 to 90 points	9(nine) B
			91 to 100 бода	10(ten) A
19.	Condition for getting a signature and taking the final exam	60% 60% success of all activities before exam		
20.	Language of instruction	Macedonian language		
21.	Method of monitoring the quality of teaching	Only evulation		

22.	Literature				
	22.1.	Compulsory literature			
		Ord. Num	Author	Title	publisher	year
		1.	Aco Kuzelov	Primary processing of meat-internal script	UGD Stip	2011
		2.	Borislav Djinleski	Meat and meat product	UKIM Skopje	1985
		3.	Mitre Stojanovski	Production and knowledge of meat	UKLO Bitola	2010
	22.2.	Дополнителна литература			
		Ord. Niu.	Author	Title	publisher	Year
		1.	Petar Radetic	Raw sausage	Beograd	2000
		2.	Svetomir Rahelic Jaroslav Joksimovic Franc Buchar	Technology of meat	T Faculty of Technology Novi Sad	1980

Appendix No.3	**Syllabus for the first, second and third cycle of study**	
1.	**Course title**	**Machines in the industry for animal products**
2.	**Course code**	2ZF205712
3.	**Study programme**	
4.	**Organizer of the study programme (faculty, institute, group)**	Faculty for agriculture. Department for processing and control of animal products

5.	**Level (first, second, third cycle)**	Second cycle			
6.	**Academic year / semester**	Second year / second semester	7.	Number of ECTS credits	6
8.	**Professor**	Ph.D Zoran Dimitrovski			
9.	**Preconditions for course enrollment**	No			
10.	**Goals of the course programme:** Expend of the knowledge of the students for technological operations and the use of the machines and the apparatuses in the food industry.				
11.	**Content of the course programme:** **A) Contents of lectures:** 1. Hydrodynamic process; 2. Mechanics of fluids, Bernoli equation; 3. Mix of fluid environment and transfer of heat; 4. Processes of clarification and sedimentation; 5. Processes of extraction and drying; 6. Elements of the automatic control system and use of hydraulics; 7. Machine milking and procedures after milking; 8. Machines and equipment for milk processing; 9. Machines and equipment for cheese, butter, condensed milk and powder milk production; 10. Tools and machines in the meat industry; 11. Cutting and grinding machines, mixers; 12. Can closer machines, pasteurization and sterilization. **B) Content of exercises:** 1. Practical examples of hydrodynamic processes; 2. Use of Bernoli equation in the hydrodynamic systems; 3. Practical examples of mixing of fluid environment and transfer of heat; 4. Practical examples of the processes of clarification and sedimentation; 5. Practical examples for extraction and drying; 6. Practical examples and use of automatic control system as well as use of hydraulics; 7. Practical introducing with the milking machines; 8. Detailed introducing with milking and processing machines; 9. Detailed introducing with the tools and machines for cheese, butter and powder milk production; 10. Practical introduce with the meat processing tools and machines; 11. Practical introduce with the tools and machines for meat cutting, grinding and process of meat; 12. Detailed introducing with pasteurization and sterilization machines in the meat industry.				
12.	**Methods of study:** Lectures, theoretical and practical exercises, consultations; individual projects; home learning				
13.	**Total amount of available time**	156 hours			
14.	**Distribution of the available time**	2 +2 +1			
15.	**Forms of teaching activities**	15.1.	Lectures - theoretical training	2 hours a week	
		15.2.	Exercises(Visit of organizations)seminars, teamwork	2 hours a week	
16.	**Other forms of activities**	16.1.	Project tasks	1 hour a week	
		16.2.	Individual projects	1 hour a week	
		16.3.	Home learning	1 hour a week	
17.	**Forms of assessment**				

	17.1.	Project task		30 points
	17.2.	Project activities (oral and written presentation)		50 points
	17.3.	Activity and participation		20 points
18.	**Criteria for assessment (points / grade)**		to 50 points	5(five) (F)
			from 51 to 60 points	6(six) (E)
			from 61 to 70 points	7(seven) (D)
			from 71 to 80 points	8(eight) (C)
			from 81 to 90 points	9(nine) (B)
			from 91 to 100 points	10(ten) (A)
19.	**Condition for getting a signature and taking the final exam**		Project activities and attending to lectures and exercises	
20.	**Language in which classes are conducted**		Macedonian	
21.	**Method of monitoring the quality of instruction**		Self-evaluation, periodical tests, poll	

22. **Literature**

Compulsory literature

	Ordinal No.	Author	Title	Publisher	Year
22.1.	1.	Милојковиќ П, Груиќ Т.	Automatic control	Mechanical engineering-Beograd	2001
	2.	Беличовски	Meat and meat processing	Skopje	2000
	3.	А. Гроздановски	Tools and machines for milk processing	Bitola	2006

Additional literature

	Ordinal No.	Author	Title	Publisher	Year
22.2.	1.	А.Г Косаткин,	Basic processes and apparatuses in the chemical technology	Moscow	1973
	2.				
	3.				

Appendix No.3	**Subject programme from the first, second and third cycle of studies.**	
1.	Title of courses	**Preservation of Meat**
2.	Code	2ZF221912
3.	Study programme	Module: Processing of Animal Products – four year study.
4.	Organizer of the study programme (unit or institute, department, division)	Faculty of Agriculture, Department for Processing of Animal Products

5.	Degree (first, second and third cycle)	Second cycle			
6.	Academic year / semester	First / second	7.	Number of ECTS credits	4
8.	**Teacher**			Doc. dr. Darko ANDRONIKOV	
9.	**Before enrollment requirements of the subject**			/	
10.	**Objectives of the curriculum (competencies):** Students become familiar with ways to preserve meat.				
11.	***The content of the curriculum:*** ***A). Contents of lectures:*** 1. Introduction. 2. Ways of the conservation of meat. 3. Cooling of meat. 4. Changes of meat caused by cooling. 5. Freezing of meat. 6. Changes caused by freezing meat. 7. Smoking of meat. 8. Preservation of meat with heat. 9. Drying of meat. 10. Salting and curing of meat. 11. Changes caused by smoking, drying, heat treatment, salting and curing of meat. 12. Preservation of antibiotics and antiseptics. ***B) Content of exercises:*** 1. Introduction. 2. Ways of the conservation of meat. 3. Cooling of meat. 4. Changes of meat caused by cooling. 5. Freezing of meat. 6. Changes caused by freezing meat. 7. Smoking of meat. 8. Preservation of meat with heat. 9. Drying of meat. 10. Salting and curing of meat. 11. Changes caused by smoking, drying, heat treatment, salting and curing of meat. 12. Preservation of antibiotics and antiseptics.				
12.	**Methods of study:** lectures, theoretical and practical exercises, consultations, making independent paper work, home learning, preparatory classes for exams and mid-term tests: consultations.Total time available.				
13.	**Total time available.**				**156 hours**
14.	**Time available.**				**2+2+1**

15.	**Forms of teaching activities**	15.1.	Lectures - theoretical lectures	2 hours per week
		15.2.	Exercises (laboratory, public), seminars, teamwork	1 hour per week
16.	**Other forms of activities**	16.1.	Project work	0,5 hour per week
		16.2.	Individual work	/
		16.3.	Home learning	0,5 hour per week

17.	Forms of assessment		
	17.1.	Project work	30 points
	17.2.	Project work (presentation: written and oral)	50 points
	17.3.	Activity and participation	20 points

18.	Criteria for assessment (points / grade)	to 50 points	5 (five) F
		from 51 to 60 points	6 (six) E
		from 61 to 70 points	7 (seven) D
		from 71 to 80 points	8 (eight) C
		from 81 to 90 points	9 (nine) B
		from 91 to 100 points	10 (ten) A
19.	Condition for getting a signature and taking the final exam	60% success of all activities before exam	
20.	Language in which classes are conducted	Macedonian	
21.	Method of monitoring the quality of teaching	Only assessment	

22.	Literature					
	22.1.	Compulsory literature				
		Ordinal number	Author	Title	Publisher	Year
		1.	Проф. Д-р. Митре Стојановски	Обработка на месо- скрипта за интерна употреба	Универзитет Свети Климент Охритски Битола Факултет за биотехнички науки Битола	
		2.				
		3.				

	22.2.	Additional literature				
		Ordinal number	Author	Title	Publisher	Year
		1.				
		2.				

Appendix No.3	**Syllabus for the first, second and third cycle of study**				
1.	**Course title**	**Sanitation in food-processing industry**			
2.	**Course code**	2ZF222012			
3.	**Study programme**	Processing and controlling of animal products			
4.	**Organizer of the study programme (faculty, institute, group)**	Department of food technology and processing of animal products, Faculty of Agriculture, University “Goce Delcev”- Stip			
5.	**Level (first, second, third cycle)**	Second cycle			
6.	**Academic year / semester**	First year/ second semester	7.	Number of ECTS credits	4
8.	**Professor**	Prof. Rubin Gulaboski, PhD			
9.	**Preconditions for course enrollment**	No			
10.	**Goals of the course programme**: Students are introduced to the basics standards and measures of the sanitation control in food-processing industry				
11.	**Content of the course programme**: ***Lectures***: 1. Introduction to sanitation; 2. Diseases that can be transferred from the food to humans; 3. Measures for getting higher level of hygiene in food industry; 4. Storage of the food; 5. Methods for cleaning in food-processing industry; 6. Treatment of the waste waters in food processing industry; 7 Ecological sanitation; 8. Solid waste treatment in food processing industry; 9. HACCP standards; 10. Implementation of HACCP; 11. Law regulative in food-processing industry; 12. Management of the waste in food-processing industry. ***Practices***: 1. Introduction; 2. Measures of sanitation 3. Diseases that can be got from poor food; 4. Microbiological parameters relevant to food quality products; 5. HACCP standards; 6. Measures for cleaning waste waters in food processing industry; 7. Measures for treatment of the solid waste in food-processing industry; 8. Storage of the solid waste; 9. Sanitation in the big factories 10. Eco-sanitation; 11. Introduction to HALAL system; 12. Preventive overthrowing of diseases;				
12.	**Methods of study**: Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.				
13.	**Total amount of available time**	120 hours			
14.	**Distribution of the available time**	2+1+1			
15.	**Forms of teaching activities**	15.1.	Lectures - theoretical training		2 classes weekly

		15.2.	Exercises (laboratory, auditory), workshops, outreach and teamwork	1 classes weekly
16.	**Other forms of activities**	16.1.	Team projects	0.5 class weekly
		16.2.	Individual projects	0.5 class weekly
		16.3.	Individual study	

17.	**Forms of assessment**		
	17.1.	Exams (midterm exams, exam, electronic testing)	30
	17.2.	Project activities (oral and written presentation)	50
	17.3.	Other forms of studying activities	20

18.	**Criteria for assessment (points / grade)**	up to 50 points	5(five) (F)
		from 51 to 60 points	6(six) (E)
		from 61 to 70 points	7(seven) (D)
		from 71 to 80 points	8(eight) (C)
		from 81 to 90 points	9(nine) (B)
		from 91 to 100 points	10(ten) (A)
19.	**Condition for getting a signature and taking the final exam**	60% of term activities, project activities and attending to lectures and discussions	
20.	**Language in which classes are conducted**	Macedonian	
21.	**Method of monitoring the quality of instruction**	Self-evaluation, anonym polls	

22. **Literature**

Compulsory literature

Ordinal No.	Author	Title	Publisher	Year
1.	Semih Otles	Handbook of Food Analysis Instruments, Taylor & Francis, Semih Otles (ed.) 2008. http://www.chipsbooks.com/hbfdinst.htm	Taylor & Francis	2008
2.	G. Etienne	Principles of cleaning and sanitation in the food and beverage industry,	Marcel Dekker, New York	2006
3.				

Additional literature

Ordinal No.	Author	Title	Publisher	Year
1.	Rubin Gulaboski	Authorized lectures in ppt format, available in free format on www.rubingulaboski.synthasite.com	UGD	2010
2.				
3.				

Appendix No.3	**Syllabus for the first, second and third cycle of study**

1.	Course title	**Milk and fermented dairy products**			
2.	Course code	2ZF222112			
3.	Study programme	Module: Processing of Animal Products – four year study.			
4.	Organizer of the study programme (faculty, institute, group)	Faculty of Agriculture, Department for Processing of Animal Products			
5.	Level (first, second, third cycle)	Second cycle			
6.	Academic year / semester	First / II	7.	Number of ECTS credits	4
8.	Professor	Prof. Stevce Presilski, PhD			
9.	Preconditions for course enrollment	No			
10.	The course programme aims to introduce students with physical and chemical, sensory and technological properties, probiotic dairy products, different milk types condensed and dried milk products				
11.	Content of the course programme: **Content of the lectures:** 1. Definition of milk, various types of edible, condensed and dried milk products as part of the total global, European and Macedonian milk production. 2. Methods for extending the milk in good condition (physical, chemical and biological). 3. Preparation of milk to manufacture the various types of liquid dairy products (pasteurized, sterilized, accordingly, flavor, and vitaminyzed, fluoridated). 4. Standardization, ways and methods to standardize the milk intended for the manufacture of various types of dairy products 5. Concept of pure cultures, types and methods of their activation and inoculation of milk intended for the production of sour milk products. 6. Types of fermentation in milk intended for the manufacture of various dairy products. 7 Preparation of milk and technologies for the production of condensed and dried milk products. 8 Preparation of milk and technologies for the production of probiotic dairy products. 9. Preparation of milk and technologies for production of caseinates. 11. Preparation of milk and technologies for the production of concentrated milk by using membrane processes. 12 Sanitation of equipment, vehicles and facilities for processing and milk processing. **Content of exercises (practical and laboratory):** Quantitative determination of total dry matter in milk and dairy products as well as its individual constants (proteins, fats, lactose, mineral materials). Taking the middle test and ways of taking it by international standards (IDF, ISO/AOAC). Taking a sample of various types' liquid, fermented, condensed and dried milk products. Equipment, machinery and tools for preservation of samples and their transport. Practical work in the university laboratory to produce traditional yogurt and yogurt, kefir, fruit yogurt, and sour cream kumis. Field work - visiting two to three milk factories				
12.	Methods of study: Lectures, Theoretical exercises, Laboratory exercises, E-learning, individual and team projects, consultations for the final exam, Final exam.				
13.	Total amount of available time	120 hours			
14.	Distribution of the available time	2+1+1			
15.	Forms of teaching activities	15.1.	Lectures - theoretical training	2	
		15.2.	Exercises (laboratory, auditory), workshops, outreach and teamwork	1	

16.	Other forms of activities	16.1.	Team projects	0.5
		16.2.	Individual projects	0.5
		16.3.	Individual study	

17.	Forms of assessment		
	17.1.	Exams (midterm exams, exam, electronic testing)	30
	17.2.	Project activities (oral and written presentation)	50
	17.3.	Other forms of studying activities	20

18.	Criteria for assessment (points / grade)	to 50 points	5 (five) (F)
		from 51 to 60 points	6 (six) (E)
		from 61 to 70 points	7 (seven) (D)
		from 71 to 80 points	8 (eight) (C)
		from 81 to 90 points	9 (nine) (B)
		from 91 to 100 points	10 (ten) (A)
19.	Condition for getting a signature and taking the final exam	60% of term activities, project activities and attending to lectures and discussions	
20.	Language in which classes are conducted	Macedonian	
21.	Method of monitoring the quality of instruction	Self-evaluation	

22. Literature

Compulsory literature

Ordinal No.	Author	Title	Publisher	Year
1.	Stevce Presilski	Milk and fermented dairy products	Faculty of Biotechnical Sciences	2005
2.	Marijana Caric et al.	Standardne metode analize mleka I mlecnih proizvoda	Novi Sad	2000
3	Tratik Ljubica	Mlijeko – tehnologija, biokemija I mikrobiologija	Zagreb	1998

Additional literature

Ordinal No.	Author	Title	Publisher	Year
1.	Petricic Ante	Konzumno I fermentirano mleko	Zagreb	1984
2	Petricic Ante, Tratik Ljubica	Vrste mlijeka, vrste proizvoda I tehnoloske procese	Zagreb	1996

Appendix No.3	**Subject programme from second cycle studies**	
1.	Course title	**Fundamentals of Management**
2.	Course code	2ZF205912
3.	Study programme	Department for processing and

		control of animal products			
4.	Organizer of the study programme (faculty, institute, group)	University “Goce Delcev”- Stip. Faculty of Agricultural - Stip			
5.	Level (first, second, third cycle)	Second cycle			
6.	Academic year / semester	Second, 2012/13	7.	Number of ECTS credits	4
8.	Professor	Doc. Elenica Sofijanova, PhD			
9.	Preconditions for course enrollment	No			
10.	*Goals of the course programme:* To introduce students to the fundamental laws management, be able to explain the thesis that management is separate scientific discipline to learn management principles and to be able to distinguish between successful and efficient operation of the organization.				
11.	Content of the course programme: A) *Content of lectures:* 1. Introduction and definition of management; 2. Operational research, problem solving and decision making; 3. Information and information systems; 4. Fundamentals of organizational communication; 5. Currently, networks and types in organizational communication; 6. Management by objectives and managerial planning function 7. Management organization: coordination, range of management and organizational design; 8. Organizational Conflict 9. Staffing 10. Motivating 11. Running 12. Systems and processes controlling. B) *Content of exercises:* 1. Basic principles and concepts of management in agriculture 2. Reviewing examples of agricultural organizations, 3. Types of management in agriculture, 4. Planning function in agriculture;5. Organizing function in agriculture, 6. Management function in agriculture 7. Function coordination and control in agriculture, 8.Decision making in agriculture; 9. Production management in agriculture: 10. Financial Management in Agriculture, 11. Marketing Management in agriculture, 12. Management of farm;				
12.	Methods of study: Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.				
13.	Total amount of available time	120hours			
14.	Distribution of the available time	2 +1 +1			
15.	Forms of teaching activities	15.1.	Lectures - theoretical training		2
		15.2.	Exercises (laboratory, auditory), workshops, outreach and teamwork		1
16.	Other forms of activities	16.1.	Team projects		1
		16.2.	Individual projects		
		16.3.	Individual study		
17.	Forms of assessment				
	17.1.	Exams (midterm exams, exam, electronic testing)			30
	17.2.	Project activities (oral and written presentation)			50
	17.3.	Other forms of studying activities			20
18.		to 50 points			5(five) (F)

	Criteria for assessment (points / grade)	from 51 to 60 points	6(six) (E)
		from 61 to 70 points	7(seven) (D)
		from 71 to 80 points	8(eight) (C)
		from 81 to 90 points	9(nine) (B)
		from 91 to 100 points	10(ten) (A)
19.	Condition for getting a signature and taking the final exam	60% of term activities, project activities and attending to lectures and discussions	
20.	Language in which classes are conducted	Macedonian	
21.	Method of monitoring the quality of instruction	Self-evaluation, Periodic tests; Survey	

22. Literature

22.1. Compulsory literature

Ordinal No.	Author	Title	Publisher	Year
1.	Bobek Suklev	Menadzment	UKIM,Economic Faculty - Skopje	2004
2.	Todor Kralev	Osnovi na menadzment,	UKIM, Skopje	2005
3.	Dzejms D. Bajrlajn , Kenet K. Sniberger, Donald D. Ozborn	Principle of agro industrial management	Universitu of Pensilvenija	2009

22.2. Additional literature

Ordinal No.	Author	Title	Publisher	Year
1.	Todor Galev, Jorde Jakimovski	Management individual agricultural economies	ISPPI	2009
2.	Jonathan Turner Martin Taylor	Management of farm (sixth edition)	Publishing TRI center	2009
3.	D.Kej Donald William M.Edvards, Patricia A. Duffy	Management of farm (sixth edition)	Publishing TRI center	2010

Apendix No. 3	**Subject programme first, second and third cycle studies**	
1.	**Title of courses**	**PRODUCTION OF FINISHED DISHES OF MEAT**
2.	**code**	2ZF221312
3.	**Study programme**	Module processing and animal products

4.	**Organizer of the study programme(unit or institute ,department division)**	Faculty of Agriculture , department of technology and processing of animal products			
5.	**Level (first, second, third cycle)**	Second cycle			
6.	**Academic year / semester**	Secound year/third semester	7.	Number of ECTS credits	8
8.	**Teacher**	Proff. Dr. Aco Kuzelov			
9.	**Preconditions for course enrollment**	/			
10.	**Goals of the course programme:** Students are introduced to the technological procedures roizvotstvoto cans of ready meals and meat				
11.	***Content of the course programme:*** ***A).Content of lectures .*** Introduction, 2. Notion and separation of cans and finished dishes. and meaning in contemporary society; 3.Sirovini - properties and preparation; 4.Dodatoci 5.Tehnoloshki additives and processes of production of finished dishes of meat 6. Technological process of production of cans of meat, 7 Thermal processing of finished dishes and cans of meat; 8.Jadenja adult; 9.Polupripremani ate; 10Glavni dishes .. , 11Polutrajni cans. 12. durable cans **Б) Content of exercises**: 1. Introduction, 2. Notion and separation of cans and finished dishes. and meaning in contemporary society; 3.Sirovini - properties and preparation; 4.Dodatoci 5.Tehnoloshki additives and processes of production of finished dishes of meat 6. Technological process of production of cans of meat, 7 Thermal processing of finished dishes and cans of meat; 8.Jadenja adult; 9.Polupripremani ate; 10Glavni dishes .. , 11Polutrajni cans. 12. durable cans				
12.	**Methods of study:** lectures, theoretical and practical exercises, consultations, making independent paper work, home learning, preparatory classes for exams and mid-term tests: consultations.				
13.	**Total amount of available time**	216 hours			
14.	**Distribution of the available time**	3+2+2			
15.	**Forms of teaching activities**	15.1.	Lectures - Theory	3	
		15.2.	Exercises (laboratory, auditory), seminars teamwork	2	
16.	**Other forms of activites**	16.1.	Proect task s	1	
		16.2.	Individual tasks	1	
		16.3.	Home learning	.	
17.	**Forms of assessment**				
	17.1.	Proect tasks		30 points	
	17.2	Working tasks / project (presentation: written and oral)		50 points	

	17.3..	Activity and participation		20 points
18.	Criteria for assessment (points / grade)		50 points	5 (five) F
			51 to 60 points	6 (sih) E
			61 to 70 points	7(seven) D
			71 to 80 points	8(eight) C
			81 to 90 points	9(nine) B
			91 to 100 бода	10(ten) A
19.	Condition for getting a signature and taking the final exam		60% success of all activities before exam	
20.	Language in which classes are conducted		Macedonian language	
21.	Method of monitoring the quality of teaching		Self-evaluation	

22.	Literature					
	22.1.	Compulsory literature				
		Ordinal No.	Author	Title	publisher	year
		1.	Velimir Oluski	Technology of production of ready meals	Faculty of Technology Novi Sad	2011
		2.				
		3.				
	22.2.	Additional literature				
		Ordinal No	Author	Title	publisher	Year
		1.				
		2.				

Appendix No.3	**Syllabus for the first, second and third cycle of study**				
1.	**Course title**	**Instrumental Methods**			
2.	**Course code**	2ZF205812			
3.	**Study programme**	Processing and control of animal products			
4.	**Organizer of the study programme (faculty, institute, group)**	Faculty of Agriculture, University “Goce Delcev”-Stip			
5.	**Level (first, second, third cycle)**	Second cycle			
6.	**Academic year / semester**	Second year/ third semester	7.	Number of ECTS credits	8
8.	**Professor**	Prof. Rubin Gulaboski, PhD			

9.	**Preconditions for course enrollment**		No	
10.	**Goals of the course programme**: Students are introduced to the basics of analytical methods for analysis, and in the application of various instrumental methods to food samples analysis			
11.	**Content of the course programme**: ***Lectures***: 1. Introduction to instrumental techniques; 2. Precision, accuracy, reproducibility; 3. Quantum theory for the atom structure 4. Atomic absorption spectroscopy; 5. ICP MS; 6. Methods based on light absorption; 7. UV-VIS; 8. Theory of chromatography; 9. Liquid chromatography; 10. Gas chromatography; 11. Electrochemical techniques; 12. Potentiommetry and voltammetry. ***Practices***: 1. Introduction; 2. Determination of heavy metals with AAS; 3. Determination of heavy metals in food with ICP MS; 4. Determination of heavy metals in water with UV VIS; 5. Determination of total phenolic content with UV VIS; 6. Methods for lipids extraction; 8. Electrophoresis-protein detection; 9. Determination of lipids in food with HPLC: 10. Determination of proteins with liquid chromatography; 11. Voltammetric determination of heavy metals in food; 12. Electgrochemical determination of total antioxidative potential.			
12.	**Methods of study**: Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.			
13.	**Total amount of available time**		216 hours	
14.	**Distribution of the available time**		3+2+2	
15.	**Forms of teaching activities**	15.1.	Lectures - theoretical training	3 classes weekly
		15.2.	Exercises (laboratory, auditory), workshops, outreach and teamwork	2 classes weekly
16.	**Other forms of activities**	16.1.	Team projects	1 class weekly
		16.2.	Individual projects	1 class weekly
		16.3.	Individual study	
17.	**Forms of assessment**			
	17.1.	Exams (midterm exams, exam, electronic testing)		30
	17.2.	Project activities (oral and written presentation)		50
	17.3.	Other forms of studying activities		20
18.	**Criteria for assessment (points / grade)**		up to 50 points	5(five) (F)
			from 51 to 60 points	6(six) (E)
			from 61 to 70 points	7(seven) (D)
			from 71 to 80 points	8(eight) (C)
			from 81 to 90 points	9(nine) (B)
			from 91 to 100 points	10(ten) (A)
19.	**Condition for getting a signature and taking the final exam**		60% of term activities, project activities and attending to lectures and discussions	
20.	**Language in which classes are conducted**		Macedonian	

21.	**Method of monitoring the quality of instruction**		Self-evaluation, anonym polls		
22.	**Literature**				
	22.1.	***Compulsory literature***			
		Ordinal No.	Author	Title	Publisher	Year
		1.	Rubin Gulaboski	Instrumental methods, internal stuff available on www.rubingulaboski.synthasite.com	UGD-Stip	2010
		2.	Semih Otles	Handbook of Food Analysis Instruments, Taylor & Francis, Semih Otles (ed.) 2008. http://www.chipsbooks.com/hbfdinst.htm	Taylor & Francis	2008
		3.				
	22.2.	***Additional literature***			
		Ordinal No.	Author	Title	Publisher	Year
		1.	Rubin Gulaboski	Authorized lectures in ppt format, available in free format on www.rubingulaboski.synthasite.com	UGD	2010
		2.				
		3.				

Appendix No. 3	**Subject programme first, second and third cycle studies**				
1.	**Title of courses**	**FOOD SAFETY**			
2.	**code**	2ZF221412			
3.	**Study programme**	Module processing and animal products			
4.	**Organizer of the study programme(unit or institute ,department division)**	Faculty of Agriculture , Department of technology and processing of animal products			
5.	**Level (first, second, third cycle)**	Second cycle			
6.	**Academic year / semester**	Secound year/third semester	7.	Number of ECTS credits	8
8.	**Professor**	Prof. Aco Kuzelov, PhD			
9.	**Preconditions for course enrollment**	/			
10.	**Goals of the course programme:** Students are being familiarized with the safety food standard				
11.	***Content of the course programme:*** *A).**Content of lectures:** 1. Introduction, 2. History of HACCP system 3. Commonly used terms and abbreviations; 4.Preconditoned programmes for implementation of HACCP-system 5.Making HACCP plan 6. Making a block diagram of the technological process and its verification; 7 Identification and*				

	control of critical control points, 8 .. Corrective actions; 9.Critical limits and monitoring system 10. Record keeping and documentation .. , 11Procedures and work instructions. 12. internal audit **Б)** ***Contens of exercises1***. Introduction, History of HACCP sistemot3. Commonly used terms and abbreviations; 4.Preconditioned programmes for implementation of HACCP-system 5.Making HACCP plan 6. Making a block diagram of the technological process and verify it; 7 Identification and control of critical control points, 8 .. Corrective actions; 9.Critical limits and monitoring system 10. Record keeping and documentation .. , 11Procedures and work instructions. 12. internal audit			
12.	**Methods of study:** lectures, theoretical and practical exercises, consultations, making independent paper work, home learning, preparatory classes for exams and mid-term tests: consultations.			
13.	**Total amount of available time**	216 hours		
14.	**Distribution of the available time**	3+2+2		
15.	**Forms of teaching activities**	15.1.	Lectures - Theory	3
		15.2.	Exercises (laboratory, auditory), seminars teamwork	2
16.	**Other forms of activites**	16.1.	Proect tasks	1
		16.2.	Individual tasks	1
		16.3.	Home learning	.

17.	**Forms of assessment**		
	17.1.	Project tasks	30 points
	17.2	Working tasks / project (presentation: written and oral)	50 points
	17.3..	Activity and participation	20 points

18.	Criteria for assessment (points / grade)	50 points	5 (five)	F
		51 to 60 points	6 (sih)	E
		61 to 70 points	7(seven)	D
		71 to 80 points	8(eight)	C
		81 to 90 points	9(nine)	B
		91 to 100 бода	10(ten)	A
19.	Condition for getting a signature and taking the final exam	60% success of all activities before exam		
20.	Language of instruction	Macedonian language		
21.	Method of monitoring the quality of teaching	Self-evaluation		

22.	Literature					
		Compulsory literature				
		Ordinal No.	Author	Title	publisher	year
	22.1.	1.	Aco Kuzelov	HACCP system in high-risk industtrija internal script of lectures - internal script	UGD Stip	2011
		2.				

		3.				
	22.2.	Additional literature				
		Ordinal No.	Author	Title	publisher	Year
		1.				
		2.				