

**DEPARTMENT OF PLANT PRODUCTION****Study programme: Field crops****DIPLOMA: MASTER OF AGRICULTURAL SCIENCES – FIELD CROPS**

CODE	I SEMESTER – FIRST YEAR			
	Compulsory course	Credits	Classes	Total
2ZF230112	Methods in scientific research work	8	3+2+2	216
2ZF210112	Agroecosystems	8	3+2+2	216
2ZF230212	Biostatistics	6	2+2+1	156
	<i>Faculty elective course</i>	4	2+1+1	120
	<i>Faculty elective course</i>	4	2+1+1	120
<b>Total:</b>		30	12+8+7	828

CODE	II SEMESTER – FIRST YEAR			
	Compulsory course	Credits	Classes	Total
2ZF210212	Cereal plants	8	3+2+2	216
2ZF210312	Organic field crops	8	3+2+2	216
2ZF210412	Physiology of crops plants	6	2+2+1	156
	<i>Faculty elective course</i>	4	2+1+1	120
	<i>Faculty elective course</i>	4	2+1+1	120
<b>Total:</b>		30	12+8+7	828

CODE	III SEMESTER – SECOND YEAR			
	Compulsory course	Credits	Classes	Total
2ZF210512	Leguminous plants	8	3+2+2	216
2ZF210612	Industrial plants	8	3+2+2	216
2ZF201612	Diseases and pests of field crops	8	2+2+1	156
	<i>University elective course</i>	6	2+2+1	156
<b>Total:</b>		30	11+8+7	804

CODE	IV SEMESTER – SECOND YEAR			
	Compulsory course	Credits	Classes	Total
	Master's thesis	30	0+0+26	818
<b>Total:</b>		30	0+0+26	818

CODE	<i>Faculty elective course I semester</i>			
2ZF210712	Alternative field crops	4	2+1+1	120
2ZF210812	Ecology and agro techniques for associated crops	4	2+1+1	120
2ZF210912	Rotation in field crops production	4	2+1+1	120
2ZF205112	Fertilization of field crops	4	2+1+1	120
<i>Faculty elective course II semester</i>				
2ZF211012	Growing of wheat, barley and triticale	4	2+1+1	120
2ZF211112	Growing of alfalfa, soybeans and chickpea	4	2+1+1	120
2ZF211212	Growing of sunflower, oil beet and flax	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	<b>METHODS IN SCIENTIFIC RESEARCH WORK</b>

2.	<b>Course code</b>	<b>ZZF230112</b>			
3.	<b>Study programme</b>	Field crops			
4.	<b>Organizer of the study programme (faculty, institute, group)</b>	"Goce Delcev" University - Stip, Faculty of Agriculture, Stip, Department for plant and environmental protection			
5.	<b>Level (first, second, third cycle)</b>	Second cycle			
6.	<b>Academic year / semester</b>	First year / I semester	7.	Number of ECTS credits	8
8.	<b>Professor</b>	<b>Prof. Ilija Karov, PhD</b>			
9.	<b>Preconditions for course enrollment</b>	No			
10.	<b>Goals of the course programme:</b> Introduction to the basic rules and principles in science, the scientific research methods and characteristics that should possess the scientific worker.				
11.	<p><b>Content of the course programme:</b></p> <p><b>Contents of lectures:</b> 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.</p> <p><b>Content of exercises:</b> 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.</p>				
12.	<b>Methods of study:</b> lectures, theoretical and practical exercises, consultations, independent paper work, home learning, preparatory classes for exams and mid-term tests, consultations.				
13.	<b>Total amount of available time</b>	216 hours			
14.	<b>Distribution of the available time</b>	3+2+2			
15.	<b>Forms of teaching activities</b>	15.1.	Lectures - theoretical training	3	
		15.2.	Exercises (laboratory, auditory), workshops, outreach and teamwork	2	
16.	<b>Other forms of activities</b>	16.1.	Team projects	1	
		16.2.	Individual projects	1	
		16.3.	Individual study		
17.	<b>Forms of assessment</b>				
	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.	<b>Criteria for assessment (points / grade)</b>	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.	<b>Condition for getting a signature and taking the final exam</b>	60% of term activities, project activities and attending to lectures and discussions			
20.	<b>Language in which classes are conducted</b>	Macedonian			
21.	<b>Method of monitoring the quality of instruction</b>	Self-evaluation			
22.	<b>Literature</b>				
	<b>Compulsory literature</b>				
	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
	<b>Additional literature</b>				
	Ordinal No.	Author	Title	Publisher	Year
22.2.	1.	Dr. Slavko Borojevic	Metodologija eksperimentalnog naucnog rada	Radnicki Univerzitet "Radivoj Cirpanov"	1974

<b>Appendix No.3</b>		<b>Syllabus for the first, second and third cycle of study</b>			
1.	<b>Course title</b>	<b>Agroecosystems</b>			
2.	<b>Course code</b>	2ZF210112			
3.	<b>Study programme</b>	Crops production			
4.	<b>Organizer of the study programme (faculty, institute, group)</b>	University "Goce Delcev" - Stip, Faculty of Agriculture, Stip, Plant Production			
5.	<b>Level (first, second, third cycle)</b>	Second cycle			
6.	<b>Academic year / semester</b>	First / I	7.	Number of ECTS credits	8
8.	<b>Professor</b>	Prof. Liljana Koleva-Gudeva, PhD			
9.	<b>Preconditions for course enrollment</b>	No			
10.	<b>Goals of the course programme:</b>	Students are introduced with acquisition of theoretical and practical knowledge of life processes and throughout the life cycle of plants depending on environmental conditions. Research in the field of agro ecology, agro ecosystems and connects the living conditions and the ability of plants depending on environmental conditions, through positive and negative impacts.			
11.	<b>Content of the course programme:</b>	Content of the lectures: 1. Introduction to agro ecology. 2. Notion of aerosphere, agro biotope, agro biocenose. 3. Key Features of agro ecosystems. 4. General rules in various activities of environmental factors - biotic and abiotic. 5. Measures for rational use of solar energy. 6. Autonomic space. 7. Water as agro-environment factor. 8 Physiology of stress. 9			

	Global climatological changes. 10 Global warming. 11 Emissions. 12 Effect of "Glass Valley". Content of exercises ( <b>practical</b> and laboratory): 1. Providing optimal index plate surface. 2 Utilization of production area. 3 Laws of returns. 4 Methods for assessment of humidity / acidification of climate in agriculture. 5 Determination of temperature thresholds for the beginning and end of vegetation. 6 The impact of climate change on agro ecosystems. 7 Resistance of plants to different stress factors. 8 Analysis of agro-ecological factors at the farm level. 9 Standards for sustainable agricultural production. 10 Sustainable agro ecosystems - organic farming. 11 Field exercise. 12 Presentation of papers.				
12.	<b>Methods of study:</b> Lectures, Theoretical exercises, Laboratory exercises, E-learning, individual and team projects, consultations for the final exam, Final exam.				
13.	<b>Total amount of available time</b>		216 hours		
14.	<b>Distribution of the available time</b>		3 + 2 + 2		
15.	<b>Forms of teaching activities</b>	15.1.	Lectures - theoretical training	3	
		15.2.	Exercises (laboratory, auditory), workshops, outreach and teamwork	2	
16.	<b>Other forms of activities</b>	16.1.	Team projects		
		16.2.	Individual projects	3	
		16.3.	Individual study		
17.	<b>Forms of assessment</b>				
	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.	<b>Criteria for assessment (points / grade)</b>		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.	<b>Condition for getting a signature and taking the final exam</b>		60% of term activities, project activities and attending to lectures and discussions		
20.	<b>Language in which classes are conducted</b>		Macedonian		
21.	<b>Method of monitoring the quality of instruction</b>		Self-evaluation		
22.	<b>Literature</b>				
22.1.	<b>Compulsory literature</b>				
	Ordinal No.	Author	Title	Publisher	Year
	1.	Milto Mulev	Plant Ecology	UKIM Skopje	2007
	2.	Liljana Koleva Gudeva	Agro ecology	UGD	2011
22.2.	<b>Additional literature</b>				
	Ordinal No.	Author	Title	Publisher	Year
	1.	Liljana Koleva Gudeva	Plant Physiology	UGD	2010

		2.	Larcer	Eco physiology of plants	Government Project translation of 500 scientific books	2009	
Appendix No.3		<b>Syllabus for the first, second and third cycle of study</b>					
1.	<b>Course title</b>			<b>BIOSTATISTICS</b>			
2.	<b>Course code</b>			<b>2ZF230212</b>			
3.	<b>Study programme:</b>			<b>Field crops</b>			
4.	<b>Organizer of the study programme (faculty, institute, group)</b>			Department for plant and environmental protection Faculty of Agriculture University "Goce Delcev"- Stip.			
5.	<b>Level (first, second, third cycle)</b>			Second cycle			
6.	<b>Academic year / semester</b>			Second year/ first semester	7.	<b>Number of ECTS credits</b>	6
8.	<b>Instructor</b>			<b>Prof. Tatjana Atanasova Pacemska, PhD</b>			
9.	<b>Preconditions for course enrollment</b>						
10.	<b>Goals of the course programme:</b> Getting more detailed knowledge for the use of statistical methods in agricultural practice						
11.	<b>Content of the course programme:</b> <b>Content of lectures:</b> 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. <b>Content of exercises:</b> 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.	<b>Methods of study:</b> Lectures, theoretical and practice exercises, consultations; individual work; home learning; preparatory classes for exams and mid-term tests: consultation;						
13.	<b>Total amount of available time</b>			156 hours			
14.	<b>Distribution of the available time</b>			2+2+1			
15.	<b>Forms of teaching activities</b>		15.1.	Lectures - theoretical training	2		
			15.2.	Exercises (laboratory, auditory), workshops, outreach and teamwork	2		
16.	<b>Other forms of activities</b>		16.1.	Team projects	1		
			16.2.	Individual projects	-		
			16.3.	Individual study	-		
17.	<b>Forms of assessment</b>						
	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.	<b>Criteria for assessment (points / grade)</b>		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.	<b>Condition for getting a signature and taking the final exam</b>		60% of term activities		
20.	<b>Language in which classes are conducted</b>		Macedonian		
21.	<b>Method of monitoring the quality of instruction</b>		Self-evaluation		
22.	<b>Literature</b>				
	<b>Compulsory literature</b>				
	Ordinal No.	Author	Title	Publisher	Year
22.1.	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

<b>Appendix No.3</b>		<b>Syllabus for the first, second and third cycle of study</b>			
1.	Course title	Cereal plants			
2.	Course code	2ZF210212			
3.	Study programme	Crops production			
4.	Organizer of the study programme (faculty, institute, group)	University "Goce Delcev"- Stip, Faculty of Agriculture, Department of Crop Production			
5.	Level (first, second, third cycle)	Second cycle			
6.	Academic year / semester	first / II	7.	Number of ECTS credits	8
8.	Professor	Ass. prof. Mite Ilievski			
9.	Preconditions for course enrollment	No			
10.	Goals of the course programme: Students are acquired with upper-intermediate knowledge of morphological, biological, economic and production characteristics of crop and application of appropriate agro-technical measures for the proper growth and achievement of high yields and quality.				
11.	Content of the course programme: Content of the lectures: 1. Introduction, definition, separation plant, officials and a review of the world's land under crops, 2. Classification of grains and differences between two groups of grains 3. Wheat; 4. Barley; 5. Rye; 6. Oats; 7. Wheat-rye hybrid-triticale; 8. Corn; 9. Sorghum; 10. Rice; 11. Millet; 12. Buckwheat and Canary grass.				

	Content of exercises ( <b>practical</b> and laboratory): 1. Economic importance of cereal crops; 3. Classification, morphological features, and quality varieties of wheat; 4. Classification, morphological features, and quality varieties of barley; 5. Classification, morphological characteristics, varieties and quality rye; 6. Classification, morphological features, quality and varieties of oats; 7. Classification, morphological features, quality and varieties of triticale; 8. Classification, morphological features, quality and varieties of corn; 9. Classification, morphological characteristics, varieties and quality of sorghum; 10. Classification, morphological features, and quality varieties of rice; 11. Classification, morphological features, quality and varieties of millet, buckwheat and canary grass; 12. Field exercises.				
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		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		
		16.2.	Individual projects	2	
		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.	G. Vasilevski	Grain and tuber culture	Expresive graphics-Skopje	2004
	2.	Đorđe Glamočlija	Special field production, cereals and grain leguminoses plants	Draganič-Belgrade	2004

		3.	Đorđe Glamočlija	Special field production, Exercises book	Draganič-Belgrade	2004
	22.2.	Additional literature				
		Ordinal No.	Author	Title	Publisher	Year
		1.	P. Egumenovski D. Bocevski P. Mitkovski	Special field production	Library, books, Skopje	2003
		2.	State statistical office on Republic of Macedonia	Field crops, orchards and vineyards, 2012	State statistical office–Skopje, Dame Gruev-4	2012
		3.	M. Ilievski	Cereals-authorized lectures in pdf format for students of the Faculty of Agriculture, UGD-Stip	University Goce Delcev-Stip	2012

Appendix No.3		Syllabus for the first, second and third cycle of study			
1.	<b>Course title</b>	<b>Organic field crops</b>			
2.	<b>Course code</b>	2ZF210312			
3.	<b>Study programme</b>	Field crops			
4.	<b>Organizer of the study programme (faculty, institute, group)</b>	Faculty of Agriculture, University “Goce Delcev”-Stip, Department of Plant production			
5.	<b>Level (first, second, third cycle)</b>	Second cycle			
6.	<b>Academic year / semester</b>	first year/ second semester	7.	Number of ECTS credits	8
8.	<b>Professor</b>	Prof. Ljupco Mihajlov, PhD			
9.	<b>Preconditions for course enrollment</b>	No			
10.	<b>Goals of the course programme:</b> Students gain understanding, knowledge and skills about application of techniques in organic field crops. They acquire competencies about specific of conversion, certification in organic field crops based on the law and current regulations in the Republic of Macedonia, related to cultural field crops.				
11.	<b>Content of the course programme:</b> <b>Lectures:</b> Introduction in organic field crops; 2. Legal status of organic method of plant production; 3. The influence of organic field crops on the environment; 4. Standards and regulations for production organic food from field crops; 5. The process of conversion to organic field crops; 6. Multi functionality of organic field crops; 7. Agro-technique and protection in organic field crops; 8. Field crops nutrition according to organic production; 9. Bio pesticides and bio fertilizers allowed in organic field crops; 10. Integral methods for protection field crops in organic production; 11. Certification in organic field crops; 12. Methods for development of organic field crops. <b>Practices:</b> 1. Specifics in basic agro-technical measures in organic field crops; 2. Setting the Polish experience for examining organic field crops under criteria of organic production; 3. Guide for organic soybean production; 4. Guide for organic potato production; 5. Guidelines for organic production of cabbage; 6. Guide for organic alfalfa production; 7. Utilization of nitrogen fixation in organic field crops; 8. Conversion				



	from conventional to organic field crops; 9. Prerequisite that should meet seed material for organic production of various crops; 10. Specifics protection in organic field crops; 11. Specifics for fertilization of field crops in organic production; 12. Visit to organic field crops farm.				
12.	<b>Methods of study:</b> Lectures, theoretical and laboratory exercises, consultations, e-learning, individual and team projects, e-learning, prepare lecture for exams.				
13.	<b>Total amount of available time</b>		216 hours		
14.	<b>Distribution of the available time</b>		3+2+2		
15.	<b>Forms of teaching activities</b>	15.1.	Lectures - theoretical training		3
		15.2.	Exercises (laboratory, auditory), workshops, outreach and teamwork		2
16.	<b>Other forms of activities</b>	16.1.	Team projects		1
		16.2.	Individual projects		/
		16.3.	Individual study		1
17.	<b>Forms of assessment</b>				
	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.	<b>Criteria for assessment (points / grade)</b>		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.	<b>Condition for getting a signature and taking the final exam</b>		60% success level of all pre-exam activities		
20.	<b>Language in which classes are conducted</b>		Macedonian		
21.	<b>Method of monitoring the quality of instruction</b>		Self-evaluation		
22.	<b>Literature</b>				
22.1.	<b>Compulsory literature</b>				
	Ordinal No.	Author	Title	Publisher	Year
	1.	Expert group of Ministry of Agriculture Forestry and Water Economy of the Republic of Macedonia	Guides for organic production	Ministry of Agriculture Forestry and Water Economy of the Republic of Macedonia	2008
	2.	Veladžić M, Čaklavica F. Fejzić N.	Organic food production	IK >>Liljan<< Sarajevo	2003
	3.	Nic Lampin et all.	Manual to guide organic farms	Government of the Republic of	2009

				OP	Macedonia, Project for translate of 500 books	
22.2.	<b>Additional literature</b>					
	Ordinal No.	Author	Title	Publisher	Year	
	1.	Ljupco Mihajlov	Guide for organic soybean production	University Goce Delcev, Stip	2011	
	2.	Borivoj Šarapatka, Jiri Urban et.al.	Organic agriculture	Ministry of Agriculture of the Czech Republic	2009	
3.	Franc and Martina Bavec	Organic production and utilization of field crops	Government of the Republic of Macedonia, Project for translate of 500 books	2009		

Appendix No.3		Syllabus for the first, second and third cycle of study			
1.	Course title	<b>Physiology of crops plants</b>			
2.	Course code	2ZF210412			
3.	Study programme	Crops production			
4.	Organizer of the study programme (faculty, institute, group)	University "Goce Delcev"- Stip, Faculty of Agriculture, Stip, Plant Production			
5.	Level (first, second, third cycle)	Second cycle			
6.	Academic year / semester	First / II	7.	Number of ECTS credits	6
8.	Professor	Prof. Liljana Koleva-Gudeva, PhD			
9.	Preconditions for course enrollment	No			
10.	Goals of the course programme: The course aims to familiarize students with life processes of the plant in its entire life cycle. Physiological processes occurring in the plant create organic matter and energy, which is energy on the survival of animal and plant life on earth.				
11.	Content of the course programme: Content of the lectures: Historical development of plant physiology. Phylogenetic tree of living organisms. Chemical composition of plants. Water balance: transpiration. Gutcion. Receive transport and function of mineral salts. Mechanism of Photosynthesis: Calvin cycle, C-3, C-4 and CAM photosynthesis. Photorespiration. Respiration: glycolysis, Krebs cycle, pentose phosphate path, $\beta$ oxidation Glykoxilae cycle. Physiology of seeds and fruits. Physiology of stress. Phytohormones and growth regulators. Biosynthesis and catabolism of auxsyne, giberelyne, cytokinine, ABA and ethylene. Jasmonates. Brasinosteroides. Oligosaccharides. Polyamines. Secondary metabolism: phenols, alkaloids and therpene. Culture of plant cells and tissues in vitro. Content of exercises ( <b>practical</b> and laboratory): Quantitative analysis of the basic components in plants. Free, hygroscopic and total water. Dry solids. Total minerals. Total organic matter. Quantitative analysis of nitrogen in plants. Protein. Cellulose. Starch. Oils. Photosynthesis: Isolation of				

	chloroplasts. Quantitative analysis of photosynthetic pigments. Proving Phytohormones. Vegetative propagation of plants. Micro propagation in vitro.					
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		156 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			
		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					
	22.1.	Ordinal No.	Author	Title	Publisher	Year
		1.	Liljana Koleva Gudeva	Plant Physiology	UGD	2010
		2.	Liljana Koleva Gudeva	Agro ecology	UGD	2011
	Additional literature					
	22.2.	Ordinal No.	Author	Title	Publisher	Year
		1.	Taiz L., Zeiger E.	Plant Physiology	Sunderland, Massachusetts, USA	2006
		2.	Larcer	Eco physiology of plants	Government Project translation of 500 scientific books	2009

1.	<b>Course title</b>	Leguminous plants			
2.	<b>Course code</b>	2ZF210512			
3.	<b>Study programme</b>	Field crops			
4.	<b>Organizer of the study programme (faculty, institute, group)</b>	Faculty of Agriculture, University "Goce Delcev"-Stip, Department of Plant production			
5.	<b>Level (first, second, third cycle)</b>	Second cycle			
6.	<b>Academic year / semester</b>	Second year/ third semester	7.	Number of ECTS credits	8
8.	<b>Professor</b>	Prof. Ljupco Mihajlov, PhD			
9.	<b>Preconditions for course enrollment</b>	No			
10.	<b>Goals of the course programme:</b> Detailed study about the group of leguminous plants. Studying the meaning, history development, morphology, biology, agro-technique and storage of leguminous plants.				
11.	<b>Content of the course programme:</b> <b>Lectures:</b> Introductory lecture (about the subject, tasks and goals of learning); 2. Meaning and origin of leguminous plants; 3. Divisions of leguminous plants; 4. Morphology and stages of development of major leguminous plants; 5. Agro-ecological conditions for growing leguminous plants; 6. Specificities in composting of leguminous plants; 7. Common agro-technique for the leguminous plants; 8. Irrigation of leguminous plants; 9. Seed production of leguminous plants; 10. Diseases and pests in leguminous plants; 11. Ways of collecting leguminous plants; 12. Specificities in storage and preservation of important leguminous plants. <b>Practices:</b> 1. Soil systems tillage for growing leguminous plants; 2. Determine the basic norm of manure for obtain the planned yield from individual leguminous plants; 3. Determine the norm of required quantities of seed for sowing various types of leguminous plants; 4. Classification of economically important leguminous species; 5. Macroscopic and microscopic interpretation of certain leguminous species; 6. Qualitative and quantitative assessment of plant parts - raw leguminous plants; 7. Types of reproductive material at leguminous plants; 8. Application of herbicides at leguminous plants; 9. Application of insecticides at leguminous plants; 10. Application of fungicides at leguminous plants; 11. Ways of utilization of leguminous crops; 12. Methods of selection and hybridization at leguminous plants.				
12.	<b>Methods of study:</b> Lectures, theoretical and laboratory exercises, consultations, e-learning, individual and team projects, e-learning, prepare lecture for exams.				
13.	<b>Total amount of available time</b>	216			
14.	<b>Distribution of the available time</b>	3+2+2			
15.	<b>Forms of teaching activities</b>	15.1.	Lectures - theoretical training	3	
		15.2.	Exercises (laboratory, auditory), workshops, outreach and teamwork	2	
16.	<b>Other forms of activities</b>	16.1.	Team projects	/	
		16.2.	Individual projects	1	
		16.3.	Individual study	1	
17.	<b>Forms of assessment</b>				
	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.	<b>Criteria for assessment (points / grade)</b>		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.	<b>Condition for getting a signature and taking the final exam</b>		60% success level on all pre-exam activities		
20.	<b>Language in which classes are conducted</b>		Macedonian		
21.	<b>Method of monitoring the quality of instruction</b>		Self-evaluation, Periodic tests for students, Survey		
22.	<b>Literature</b>				
	<b>Compulsory literature</b>				
	Ordinal No.	Author	Title	Publisher	Year
22.1.	1.	Egumenovski P.	Special field crops	Culture Skopje	1989
	2.	Jeftic S.	Special agriculture	Science Beograd	1992
	3.	Vasilevski G.	Grain and tuber cultures	University textbook Skopje	2004
	4				
	<b>Additional literature</b>				
	Ordinal No.	Author	Title	Publisher	Year
22.2.	1.	Takuji Ohyama et al):	Nitrogen fixation and metabolism in soybean plants	Science Publishers, Inc. New York.	2008
	2.	Đordjević V. Nenadić N.	Soybeans – meaning, properties and growing	Nolit Beograd.	1980
	3.	Љупчо Михајлов Фиданка Трајкова	Полјоделство	Универзитет "Гоце Делчев" Штип	2011

<b>Appendix No.3</b>		<b>Syllabus for the first, second and third cycle of study</b>
1.	<b>Course title</b>	Industrial plants
2.	<b>Course code</b>	2ZF210612
3.	<b>Study programme</b>	Field crops
4.	<b>Organizer of the study programme (faculty, institute, group)</b>	Faculty of Agriculture, University "Goce Delcev"- Stip, Department of Plant production
5.	<b>Level (first, second, third cycle)</b>	Second cycle

6.	<b>Academic year / semester</b>	Second year/ third semester	7.	Number of ECTS credits	8
8.	<b>Professor</b>	Prof. Ljupco Mihajlov, PhD			
9.	<b>Preconditions for course enrollment</b>	No			
10.	<b>Goals of the course programme:</b> Detailed studying about group of industrial plants. Study the meaning, history development, morphology, biology, agro-technique and storage of industrial plants.				
11.	<b>Content of the course programme:</b> <b>Lectures:</b> Introductory lecture (about the subject, tasks and goals of learning); 2. Meaning, origin and production of significant industrial plants in the world; 3. Divisions of industrial plants; 4. Morphology and stages of development of major industrial plants; 5. Relation between the industrial plants according to external influences; 6. Composting of industrial plants; 7. Common agro-technique of industrial plants; 8. Irrigation of industrial plants; 9. Seed production of industrial plants; 10. Diseases and pests in industrial plants; 11. Ways of collecting industrial plants; 12. Specificity in the storage and preservation of important industrial plants. <b>Practices:</b> 1. Soil systems tillage for growing industrial plants; 2. Determine the basic norm of manure for planned yield from individual industrial plants; 3. Determine the norm of required quantities of seed for sowing various types of industrial plants; 4. Classification of economically important industrial species; 5. Macroscopic and microscopic interpretation of certain industrial species; 6. Qualitative and quantitative assessment of plant parts - raw industrial plants; 7. Types of reproductive material for industrial plants; 8. Application of herbicides at industrial plants; 9. Application of insecticides at industrial plants; 10. Application of fungicides at industrial plants; 11. Ways of utilization of industrial crops; 12. Methods of selection and hybridization in industrial plants.				
12.	<b>Methods of study:</b> Lectures, theoretical and laboratory exercises, consultations, e-learning, individual and team projects, e-learning, prepare lecture for exams.				
13.	<b>Total amount of available time</b>	216			
14.	<b>Distribution of the available time</b>	3+2+2			
15.	<b>Forms of teaching activities</b>	15.1.	Lectures - theoretical training	3	
		15.2.	Exercises (laboratory, auditory), workshops, outreach and teamwork	2	
16.	<b>Other forms of activities</b>	16.1.	Team projects	/	
		16.2.	Individual projects	1	
		16.3.	Individual study	1	
17.	<b>Forms of assessment</b>				
	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.	<b>Criteria for assessment (points / grade)</b>		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.	<b>Condition for getting a signature and taking the final exam</b>	60% success level on all pre-exam activities			
20.	<b>Language in which classes are conducted</b>	Macedonian			
21.	<b>Method of monitoring the quality of instruction</b>	Self-evaluation, Periodic tests for students, Survey			
22.	<b>Literature</b>				
22.1.	<b>Compulsory literature</b>				
	Ordinal No.	Author	Title	Publisher	Year
	1.	Gorgievski J.	Industrial cultures	University textbook, University Ss Cyril and Methodius, Skopje	1975
	2.	Egumenovski P.	Special field crops	Culture Skopje	1989
	3.	Љупчо Михајлов Фиданка Трајкова	Полјоделство	Универзитет "Гоце Делчев" Штип	2011
4					
22.2.	<b>Additional literature</b>				
	Ordinal No.	Author	Title	Publisher	Year
	1.	Jeftic S.	Special field crops	Science Beograd	1992
	2.	Vrataric M. et all.	Sunflower	Institute for crops field	2004
3.					

<b>Appendix No.3</b>		<b>Syllabus for the first, second and third cycle of study</b>			
1.	Course title	<b>Diseases and pests of field crops</b>			
2.	Course code	2ZF201612			
3.	Study programme	Field crop production			
4.	Organizer of the study programme (faculty, institute, group)	University "Goce Delcev" - Stip, Faculty of Agriculture, Stip, Department for field crop production			
5.	Level (first, second, third cycle)	Second cycle			
6.	Academic year / semester	Second / third 2012/13	7.	Number of ECTS credits	6
8.	Professor	Prof. Sasa Mitrev, PhD Prof. Dusan Spasov, PhD			
9.	Preconditions for course enrollment	No			
10.	Goals of the course programme: The course objective is to familiarize students with the most important diseases and pests of field crops, and measures to prevent them.				
11.	Content of the course programme: Lectures: 1. Significant disease in maize. 2. Fungal diseases in sunflower. 3. Significant disease in sugar beet. 4. Viral diseases in soy 5. Fungal and bacterial				

	<p>diseases in tobacco 6. Diseases of alfalfa and red clover on 7. Pests on the cereals and corn. 8. Pests of sugar beet and sunflower. 9. Pests of soybean and oilseed beet. 10. Pest of poppy, hops and hemp. 11. Pest on tobacco. 12. Pests of alfalfa and red clover.</p> <p>Exercises: 1. Laboratory techniques for isolation of diseases on corn 2. Laboratory techniques for the isolation of important fungal diseases on sunflower 3. Significant disease in sugar beet. 4. Viral diseases in soy. 5. Fungal and bacterial diseases on tobacco 6. Diseases of alfalfa and red clover 7. Morphological characteristics of the pest on cereals and maize. 8. Morphological features of the pests on sugar beet and sunflower. 9. Morphological features of the pests on soybean and oilseed rape. 10. Morphological features of the pests on opium poppy, hops and hemp. 11. Morphological characteristics of the pest on tobacco 12. Morphological characteristics of the pest on alfalfa and red clover.</p>				
12.	Methods of study: Lectures, theoretic and field exercises, e-learning, individual and team projects, consultations.				
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	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
1.		Prof. Dusan Spasov, Ass. Biljana Atanasova	Special Entomology – internal script	UGD-Stip	2010



	2.	Пејчиновски Филип, Митрев Саша	Земјоделска фитопатологија - специјален дел	UGD-Stip	2009	
	3.					
	22.2.	Additional literature				
		Ordinal No.	Author	Title	Publisher	Year
		1.	Колектив аутора	Приручник извештајне и прогнозне службе заштите полјопривредних култура	Савез друштва за заштиту билја Југославије	1983
		2.				
3.						

Appendix No.3		<b>Syllabus for the first, second and third cycle of study</b>			
1.	Course title	<b>Alternative field crops</b>			
2.	Course code	2ZF210712			
3.	Study programme	Field crop production			
4.	Organizer of the study programme (faculty, institute, group)	University "Goce Delcev"- Stip, Faculty of Agriculture, Stip, Department for field crop production			
5.	Level (first, second, third cycle)	Second cycle			
6.	Academic year / semester	First / first 2012/13	7.	Number of ECTS credits	4
8.	Professor	Prof. Dragica Spasova, PhD			
9.	Preconditions for course enrollment	No			
10.	Goals of the course programme: Introduction to alternative crops and gaining adequate knowledge of morphological, biological, economic and productive characteristics of plants, application of appropriate agro-technical measures for their proper cultivation and achieving high yields and quality.				
11.	Content of the course programme: Lectures: 1. Introduction, definition, strategy for preserving few crops and increasing biodiversity 2. Representatives, economic meaning 3. Alternative true cereals 4. Alternative proso millet cereals: Usually millet, Italian millet, black millet, 5.Proso millet cereals: African millet, small millet, weeds millet 6. Alternative oilseed plants (oilseed pumpkin, lenovka, safflower, withe mustard, poppy 7. Alternative fiber plants, representatives and economic importance 8. Industrial and food hemp, linseed flax 9. Alternative tuber root and root crops, tuber root sunflower, jerusalem Artichoke; 10.Batata-sweet potato 11. Alternative crops leguminous-chickpeas, peanuts 12. Soybeans, vigna. Exercises: 1. General agro-technical measures and production opportunities increasing biodiversity 2. Biological properties of alternative true cereals.3 Morphological traits and varieties of krupnik, ednozrnec, dvozrnec. 4. Morphological traits usually millet, Italian millet, black millet, African millet, millet weeds and small millet 5. Morphological traits typically millet, Italian millet, black millet, African millet, millet weeds and small millet 6. Morphological characteristics, varieties and quality of alternative oilseeds 7.Morphological characteristics, varieties and quality of alternative fiber crops 8.				

	Morphological characteristics, varieties and quality of alternative root and tuber root plants, 9. Morphological characteristics, varieties and quality of alternative leguminous Plant-chickpeas, peanuts 10. Morphological characteristics, varieties and quality of soybeans, 11. Field exercises 12. Field exercises.					
12.	Methods of study: Lectures, theoretic and field 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		
		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; Periodical tests for students; survey.			
22.	Literature					
	22.1.	Compulsory literature				
		Ordinal No.	Author	Title	Publisher	Year
		1.	Франц Бавец, Мартина Бавец	Органско производство и употреба на заменски култури	Влада на РМ, Проект 500 преводи на учебници	2010
		2.	Гоце Василевски	Зрнести и клубенести култури	Факултет за земјоделски науки и храна - Скопје	2004
3.		Ђукић, Д., Јањић, В., Моисуц, А., Кишгеци, Ј.	Крмне, коровске, отровне и лековите билјке	Пољоприв редни факултет, Нови Сад	2004	

		Additional literature				
		Ordinal No.	Author	Title	Publisher	Year
22.2.	1.		Петар Егуменовски Душко Боцевски Панче Митковски	Специјално поледелство	Библиотека Учебници	2003
	2.		Stevan Jevtič	Posebno ratarstvo	IP Nauka- Beograd	1992
	3.					

Appendix No.3		Syllabus for the first, second and third cycle of study			
1.	<b>Course title</b>	<b>Ecology and agrotechnique of associated crops</b>			
2.	<b>Course code</b>	2ZF210812			
3.	<b>Study programme</b>	Field Crops			
4.	<b>Organizer of the study programme (faculty, institute, group)</b>	Faculty of Agriculture, University "Goce Delcev"-Stip, Department of Plant production			
5.	<b>Level (first, second, third cycle)</b>	Second cycle			
6.	<b>Academic year / semester</b>	First year/ first semester	7.	Number of ECTS credits	4
8.	<b>Professor</b>	Prof. Verica Ilieva, PhD			
9.	<b>Preconditions for course enrollment</b>	No			
10.	<b>Goals of the course programme:</b> Introducing the object and purpose of the study of different varieties and systems of associated crops, their importance to the practice and science, and the ability knowledge to be applied in the scientific work of the candidate.				
11.	<b>Content of the course programme:</b> <b>Lectures:</b> Introduction (tasks and objectives of the subject); (2.) Principles for production of associated crops; (3.) Concept and systems for production; (4.) Selection of cultures depending on the species, morphological and biological properties and the needs of manufacturers; (5.) Selection of cultures for associated crops in Ordinal to control weeds, pests and diseases of plants; (6.) Adaption of the system for associated crops in farming; (7.) Evaluation of the stability and the amount of yield production; (8.) Managing production in the system of associated crops; (9.) Diseases at associated crops; (10.) Pests at associated crops; (11.) Weed vegetation at associated crops; (12.) Integral protective measures at associated crops. <b>Practices:</b> Preparation of plan for production of associated crops. (2.) Practical performance of manufacturing technology in manufacturing operations; (3.) Possible crop rotation in the production of associated crops; (4.) Alternative crops for associated crops; (5.) Types of grasses compound; (6.) Norm of sowing in different combinations of compound; (7.) Evaluation of yield and quality of the resulting production; (8.) Methods of separating the yield of crops grown together; (9.) Field work and visits of associated crop.				
12.	<b>Methods of study:</b> Lectures, theoretical and laboratory exercises, consultations, e-learning, individual and team projects, e-learning, prepare lecture for exams.				
13.	<b>Total amount of available time</b>	120 hours			
14.	<b>Distribution of the available time</b>	2+1+1			

15.	<b>Forms of teaching activities</b>	15.1.	Lectures - theoretical training	2	
		15.2.	Exercises (laboratory, auditory), workshops, outreach and teamwork	1	
16.	<b>Other forms of activities</b>	16.1.	Team projects	/	
		16.2.	Individual projects	0.5	
		16.3.	Individual study	0.5	
17.	<b>Forms of assessment</b>				
	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.	<b>Criteria for assessment (points / grade)</b>		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.	<b>Condition for getting a signature and taking the final exam</b>		60% success level on all pre-exam activities		
20.	<b>Language in which classes are conducted</b>		Macedonian		
21.	<b>Method of monitoring the quality of instruction</b>		Self-evaluation, Periodic tests for students, Survey		
22.	<b>Literature</b>				
	<b>Compulsory literature</b>				
	Ordinal No.	Author	Title	Publisher	Year
22.1.	1.	Vasilevski G.	Grain and tuber culture	Skopje	2004
	2.	Jeftic S.	Special field crops	Science, Beograd	1992
	3.	Cupina, B	Creating multiyear leguminous associated crops with pea crops, Proceedings, Sveska 42, 2006	Institute for field crop, Novi Sad	2006
	4	Egumenovski P. et all.	Special field crops	Culture, Skopje	1989
	<b>Additional literature</b>				
	Ordinal No.	Author	Title	Publisher	Year
22.2.	1.				
	2.				
	3.				

Appendix No.3		Syllabus for the first, second and third cycle of study				
1.	<b>Course title</b>	<b>Rotation in field crops production</b>				
2.	<b>Course code</b>	2ZF210912				
3.	<b>Study programme</b>	Field crops				
4.	<b>Organizer of the study programme (faculty, institute, group)</b>	Faculty of Agriculture, University "Goce Delcev"-Stip, Department of Plant production				
5.	<b>Level (first, second, third cycle)</b>	Second cycle				
6.	<b>Academic year / semester</b>	first year/ first semester	7.	Number of ECTS credits	4	
8.	<b>Professor</b>	Prof. Ljupco Mihajlov, PhD				
9.	<b>Preconditions for course enrollment</b>	No				
10.	<b>Goals of the course programme:</b>					
11.	<b>Content of the course programme:</b> <b>Lectures:</b> 1. Introduction (tasks and goals of learning; 2. Importance and origin of crop rotation; 3. Reasons for the introduction of crop rotation in field crops production; 4. Requirements of field crops prior to planting, 5. Crops rotations; 6. Forage crop rotation; 7. Crop rotation in conditions of irrigation; 8. Special crop rotation; 9. Systems of plants growing crops in monoculture; 10 Integral crop rotations; 11. Crop rotation with a high share of cereals; 12. Crop rotation with a high proportion of arable crops. <b>Practices:</b> 1. Elements of crop rotation. 2. Crops composition.3. Term of the area under crop. 4. Planning, preparation and introduction of crops rotation. 5. Elements for determine the production orientation. 6. Editing land territory. 7. Determine the ratio of area under crop. 8. Assembling transitional crop rotation; 9. Determination of the number of field's crops rotation; 10. Planning crop rotation for oil beet cultures. 11. Planning a crop rotation for organic crops production. 12. Preparation of schemes for different varieties of crops rotation.					
12.	<b>Methods of study:</b> Lectures, theoretical and laboratory exercises, consultations, e-learning, individual and team projects, e-learning, prepare lecture for exams.					
13.	<b>Total amount of available time</b>	120 hours				
14.	<b>Distribution of the available time</b>	2+1+1				
15.	<b>Forms of teaching activities</b>	15.1.	Lectures - theoretical training	2		
		15.2.	Exercises (laboratory, auditory), workshops, outreach and teamwork	1		
16.	<b>Other forms of activities</b>	16.1.	Team projects	0.5		
		16.2.	Individual projects	/		
		16.3.	Individual study	0.5		
17.	<b>Forms of assessment</b>					
	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.	<b>Criteria for assessment (points / grade)</b>		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.	<b>Condition for getting a signature and taking the final exam</b>	60% success level on all pre-exam activities			
20.	<b>Language in which classes are conducted</b>	Macedonian			
21.	<b>Method of monitoring the quality of instruction</b>	Self-evaluation			
22.	<b>Literature</b>				
	<b>Compulsory literature</b>				
	Ordinal No.	Author	Title	Publisher	Year
22.1.	1.	Љупчо Михајлов Фиданка Трајкова	Полјоделство	Универзитет "Гоце Делев" Штип	2011
	2.	Molnar I.		Faculty of agriculture, Novi Sad	2004
	3.				
	<b>Additional literature</b>				
	Ordinal No.	Author	Title	Publisher	Year
22.2.	1.	Anderson, R.L..	Are some crops synergistic to following crops?	Agron. J. 97:7-10	2005
	2.	A. Srinivasan	Precisely manual for agriculture	Government of the Republic of Macedonia, Project of translate on 500 books	2009
	3.				

Appendix No.3		<b>Syllabus for the first, second and third cycle of study</b>			
1.	<b>Course title</b>	<b>Fertilization of crops</b>			
2.	<b>Course code</b>	<b>2ZF205112</b>			
3.	<b>Study programme</b>	Crops field production			
4.	<b>Organizer of the study programme (faculty, institute, group)</b>	Department of plant production, Faculty of Agriculture, University "Goce Delcev"- Stip			
5.	<b>Level (first, second, third cycle)</b>	Second cycle			
6.	<b>Academic year / semester</b>	First year/ first semester	7.	Number of ECTS credits	4
8.	<b>Professor</b>	Prof. Rubin Gulaboski, PhD			
9.	<b>Preconditions for course enrollment</b>	No			
10.	<b>Goals of the course programme:</b> Students are introduced to the basics of fertilization of crops				
11.	<b>Content of the course programme:</b>				

	<p><b>Lectures:</b> 1. Introduction; 2. Soil types, 3. Chemical composition of soil; 4. Chemical processes in the soil, pH, acidity, conductivity; 5. Organic matter in the soils; 6. Microelements in the soils-functions; 7. Methods for soil analysis; 8. Mineral fertilizers suitable for crops productions; 9. Methods for analysis of fertilizers; 10. Methods for applying fertilizers on crop fields; 11. Fertilizers for special plants and crops. 12. Making a schedule for applying fertilizers based on plant type and soil quality.</p> <p><b>Practices:</b> 1. Soil properties; 2. Determination of pH and adsorption capacity of soils; 3. Determination of total organic matter in the soils; 4. Methods for determination of primary elements (N, P, K) in soils; 5. Determination of the redox status of the soils; 6. Determination of water and granulometric composition of fertilizers; 7. Determination of total nitrogen in fertilizers by Kjeldahl method; 8. Determination of total P in fertilizers; 9. Determination of micro elements in fertilizers: 10. Determination of ammonia and nitrates in fertilizers; 11. Making a schedule for fertilization of various crops; 12. Practical fertilization</p>					
12.	<b>Methods of study:</b> Lectures, Laboratory exercises, e-learning, individual and team projects, consultations.					
13.	<b>Total amount of available time</b>		120 hours			
14.	<b>Distribution of the available time</b>		2+1+1			
15.	<b>Forms of teaching activities</b>		15.1.	Lectures - theoretical training	2 classes weekly	
			15.2.	Exercises (laboratory, auditory), workshops, outreach and teamwork	1 class weekly	
16.	<b>Other forms of activities</b>		16.1.	Team projects	0.5 class weekly	
			16.2.	Individual projects	0.5 class weekly	
			16.3.	Individual study		
17.	<b>Forms of assessment</b>					
	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.	<b>Criteria for assessment (points / grade)</b>		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.	<b>Condition for getting a signature and taking the final exam</b>		60% of term activities, project activities and attending to lectures and discussions			
20.	<b>Language in which classes are conducted</b>		Macedonian			
21.	<b>Method of monitoring the quality of instruction</b>		Self-evaluation, anonym polls			
22	<b>Literature</b>					
	<b>Compulsory literature</b>					
	22.1	Ordinal No.	Author	Title	Publisher	Year

		1.	Rubin Gulaboski	Instrumental methods, internal stuff available on <a href="http://www.rubingulaboski.synthasite.com">www.rubingulaboski.synthasite.com</a>	UGD-Stip	2010	
		2.	Rubin Gulaboski	Agrochemistry, book, available on <a href="http://www.rubingulaboski.synthasite.com">www.rubingulaboski.synthasite.com</a>	UGD	2013	
		3.					
	22.2	<b>Additional literature</b>					
		Ordinal No.	Author	Title	Publisher	Year	
		1.	Rubin Gulaboski	Authorized lectures in ppt format, available in free format on <a href="http://www.rubingulaboski.synthasite.com">www.rubingulaboski.synthasite.com</a>	UGD	2012	
		2.	MARSCHNER, H	Mineral nutrition of higher plants	London Academic Press	2002	
	3.						

Appendix No.3		Syllabus for the first, second and third cycle of study			
1.	Course title	Cultivation of wheat, barley and triticale			
2.	Course code	2ZF211012			
3.	Study programme	crops production			
4.	Organizer of the study programme (faculty, institute, group)	University "Goce Delcev"- Stip, Faculty of Agriculture, Department of Crop Production			
5.	Level (first, second, third cycle)	Second cycle			
6.	Academic year / semester	first / II	7.	Number of ECTS credits	4
8.	Professor	Ass. prof. Mite Ilievski, PhD			
9.	Preconditions for course enrollment	No			
10.	Goals of the course programme: Students are introduced with wheat, barley and triticale and acquire excellent knowledge of morphological, biological, economic and production characteristics of these plants, application of appropriate agro-technical measures for their proper growth and achieve high yields and quality.				
11.	Content of the course programme: Content of the lectures: 1. Definition and assignment of case; 2. Economic importance of wheat; 3. Terms of cultivation, production of wheat in the world and Republic of Macedonia; 4. Varieties, systems and the growing of wheat; 5. Economic importance of barley; 6. Terms of cultivation, production of barley in the world and Republic of Macedonia; 7. Varieties of barley in the world and in our country; 8. Systems of growing barley; 9. Economic importance of triticale; 10. Conditions for production and systematics on getting triticale hybrids 11. Productions of triticale in the world and Republic of Macedonia; 12. Biological and morphological traits on triticale. Content of exercises ( <b>practical</b> and laboratory):				



	1. Agro-technical measures for the production of wheat; 2. Anatomy of grain; 3. Chemical composition and quality of wheat; 4. Collecting wheat, storage and processing; 5. Agro-technical measures for the production of barley; 6. Anatomy of grain; 7. Chemical composition and quality of barley; 8. Collecting barley, storage and processing; 9. Agro-technical measures for the production of triticale; 10. Anatomy of grain; 11. Chemical composition and quality of triticale; 12. Triticale collection, storage and processing.					
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			
		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					
	22.1.	Compulsory literature				
		Ordinal No.	Author	Title	Publisher	Year
		1.	Stevan Jevtic	Special field productions	Belgrade	1992
		2.	Đorđe Glamočlija	Special field production, cereals and grain leguminoses plants	Draganič-Belgrade	2004
	3.	Đorđe Glamočlija	Special field production, Exercises book	Draganič-Belgrade	2004	
	22.2.	Additional literature				
Ordinal No.		Author	Title	Publisher	Year	

		1.	P. Egumenovski D. Bocevski P. Mitkovski	Special field production	Library, books, Skopje	2003
		2.	G. Vasilevski	Grain and tuber culture	Expressive graphics-Skopje	2004
		3.	M. Ilievski	Cereals-authorized lectures in pdf format for students of the Faculty of Agriculture, UGD-Stip	University Goce Delcev-Stip	2012

Appendix No.3		Syllabus for the first, second and third cycle of study				
1.	<b>Course title</b>	Growing of alfalfa, soybeans and chickpea				
2.	<b>Course code</b>	ZZF211112				
3.	<b>Study programme</b>	Field crops				
4.	<b>Organizer of the study programme (faculty, institute, group)</b>	Faculty of Agriculture, University "Goce Delcev"-Stip, Department of Plant production				
5.	<b>Level (first, second, third cycle)</b>	Second cycle				
6.	<b>Academic year / semester</b>	First year/ second semester	7.	<b>Number of ECTS credits</b>	4	
8.	<b>Professor</b>	Prof. Ljupco Mihajlov, PhD				
9.	<b>Preconditions for course enrollment</b>	No				
10.	<b>Goals of the course programme:</b>	Detailed study of alfalfa, soybeans and chick pea. Study of the meaning, history, morphology, biology, agro-technique and storage of alfalfa, soybeans and chickpea.				
11.	<b>Content of the course programme:</b>	<p><b>Lectures:</b> 1. Introduction (about the subject, tasks and goals of learning; 2. Importance and origin of alfalfa, soybeans and chickpea; 3. Morphological and stages of development of alfalfa, soybeans and chickpea; 5. Agro ecological conditions for growing of alfalfa, soybeans and chickpea; 6. Specificity in copmosting of alfalfa, soybeans and chickpea; 7. Agro technique of alfalfa, soybeans and chickpea; 8. Irrigation of alfalfa, soybeans and chickpea; 9. Seed production of alfalfa, soybean and chickpea; 10. Diseases and pests at alfalfa, soybeans and chickpea, 11. Ways of collecting of alfalfa, soybeans and chickpea; 12. Specificity in the storage and preservation at alfalfa, soybeans and chickpea.</p> <p><b>Practices:</b> 1. Classification of alfalfa, soybeans and chickpea; 2. Determination of the basic norm of manure for obtain planned yield from alfalfa, soybean and chickpea; 3. Determine the norm of required quantities of seed for sowing of alfalfa, soybeans and chickpea; 4. Macroscopic and microscopic interpretation of plant parts of alfalfa, soybeans and chickpea; 5. Qualitative and quantitative assessment of raw materials from alfalfa, soybeans and chickpea; 6. Finishing the seeds material of alfalfa, soybeans and chickpea; 7. Determine the quality properties of seeds of alfalfa, soybeans and chickpea; 8. Application of herbicides at alfalfa, soybeans and chickpea; 9. Application of insecticides at alfalfa, soybeans and chickpea; 10. Application of fungicides in alfalfa, soybeans and chickpea; 11. Ways of utilization of</p>				

	alfalfa, soybeans and chickpea; 12. Methods of selection and hybridization of alfalfa, soybeans and chickpea.					
12.	<b>Methods of study:</b> Lectures, theoretical and laboratory exercises, consultations, e-learning, individual and team projects, e-learning, prepare lecture for exams.					
13.	<b>Total amount of available time</b>		120 hours			
14.	<b>Distribution of the available time</b>		2+1+1			
15.	<b>Forms of teaching activities</b>	15.1.	Lectures - theoretical training	2		
		15.2.	Exercises (laboratory, auditory), workshops, outreach and teamwork	1		
16.	<b>Other forms of activities</b>	16.1.	Team projects	/		
		16.2.	Individual projects	0.5		
		16.3.	Individual study	0.5		
17.	<b>Forms of assessment</b>					
	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.	<b>Criteria for assessment (points / grade)</b>		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.	<b>Condition for getting a signature and taking the final exam</b>		60% success level on all pre-exam activities			
20.	<b>Language in which classes are conducted</b>		Macedonian			
21.	<b>Method of monitoring the quality of instruction</b>		Self-evaluation, Periodic tests for students, Survey			
22.	<b>Literature</b>					
	22.1.	<b>Compulsory literature</b>				
		Ordinal No.	Author	Title	Publisher	Year
		1.	Hrustić M. Vidić M. Jocković Đ.	Soybeans	Institute of agriculture Novi sad, Bacej	1998
		2.	Vasilevski G.	Growing of chickpea	Our book, Skopje	1985
		3.	Ancev T. Katerina B.	Forage production	University Ss. Cyril and Methodius-Skopje	1966
		4				
	22.2.	<b>Additional literature</b>				
		Ordinal No.	Author	Title	Publisher	Year

		1.	Mihajlov Lj.	Guide for organic soybeans production	University Goce Delce - Stip	2011
		2.	Đordjević V. Nenadić N.	Soybeans, Meaning, properties and growing	Nolit Beograd	1980
		3.	Egumenovski P.	Special field crops	Culture Skopje	1989

Appendix No.3		<b>Syllabus for the first, second and third cycle of study</b>			
1.	<b>Course title</b>	Growing of sunflower, oil beet and flax			
2.	<b>Course code</b>	2ZF211212			
3.	<b>Study programme</b>	Field crops			
4.	<b>Organizer of the study programme (faculty, institute, group)</b>	Faculty of Agriculture, University "Goce Delcev"-Stip, Department of Plant production			
5.	<b>Level (first, second, third cycle)</b>	Second cycle			
6.	<b>Academic year / semester</b>	First year/ second semester	7.	Number of ECTS credits	4
8.	<b>Professor</b>	Prof. Ljupco Mihajlov, PhD			
9.	<b>Preconditions for course enrollment</b>	No			
10.	<b>Goals of the course programme:</b> Detailed study of sunflower, oil beet and flax. Study of the meaning, history, morphology, biology, agro-technique and storage of sunflower, oil and flax.				
11.	<p><b>Content of the course programme:</b></p> <p><b>Lectures:</b> 1. Introductory lecture (about the subject, tasks and goals of learning; 2. Importance and origin of sunflower, oil beet and flax; 3. Morphological and stages of development of sunflower, oil beet and flax; 4. Selection and hybridization of sunflower, oil beet and flax; 5. Agro-ecological conditions for growing of sunflower, oil beet and flax; 6. Specificity in composting of sunflower, oil beet and flax; 7. Agro-technique of sunflower, oil beet and flax; 8. Irrigation of sunflower, oil beet and flax; 9. Seed production of sunflower, oil beet and flax; 10. Diseases and pests of sunflower, oil beet and flax; 11. Ways of collecting of sunflower, oil beet and flax; 12. Specificities in the storage and preservation of sunflower, oil beet and flax.</p> <p><b>Practices:</b> 1. Classification of sunflower, oil beet and flax; 2. Determination of the basic norm of manure for obtain the planned yield from of sunflower, oil beet and flax; 3. Determine the norm of required quantities of seed sowing of of sunflower, oil beet and flax; 4. Macroscopic and microscopic interpretation of plant parts of of sunflower, oil beet and flax; 5. Qualitative and quantitative assessment of raw materials of sunflower, oil beet and flax; 6. Finishing the seed material of sunflower, oil beet and flax; 7. Determine the quality properties of seeds of sunflower, oil beet and flax; 8. Application of herbicides at sunflower, oil beet and flax; 9. Application of insecticides at sunflower, oil beet and flax; 10. Application of fungicides at sunflower, oil beet and flax; 11. Ways of utilization of sunflower, oil beet and flax; 12. Methods of selection and hybridization of sunflower, oil beet and flax.</p>				
12.	<p><b>Methods of study:</b></p> <p>Lectures, theoretical and laboratory exercises, consultations, e-learning, individual and team projects, e-learning, prepare lecture for exams.</p>				
13.	<b>Total amount of available time</b>	120 hours			

14.	<b>Distribution of the available time</b>		2+1+1		
15.	<b>Forms of teaching activities</b>	15.1.	Lectures - theoretical training	2	
		15.2.	Exercises (laboratory, auditory), workshops, outreach and teamwork	1	
16.	<b>Other forms of activities</b>	16.1.	Team projects	/	
		16.2.	Individual projects	0.5	
		16.3.	Individual study	0.5	
17.	<b>Forms of assessment</b>				
	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.	<b>Criteria for assessment (points / grade)</b>		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.	<b>Condition for getting a signature and taking the final exam</b>		60% success level on all pre-exam activities		
20.	<b>Language in which classes are conducted</b>		Macedonian		
21.	<b>Method of monitoring the quality of instruction</b>		Self-evaluation, Periodic tests for students, Survey		
22.	<b>Literature</b>				
22.1.	<b>Compulsory literature</b>				
	Ordinal No.	Author	Title	Publisher	Year
	1.	Egumenovski P.	Special field crops	Culture Skopje	1998
	2.	Vrataric M et.all	Sunflower (monography)	Institute of agriculture, Osijek	2004
	3.	Gorgievski J.	Industrial crops	University textbook, Ss. Cyril and Methodius University, Skopje	1975
	4				
22.2.	<b>Additional literature</b>				
	Ordinal No.	Author	Title	Publisher	Year
	1.	Jevtic S.	Special field crop	Science Beograd	1992

	2.	<a href="http://www.inspection.gc.ca/plants/plants-withnoveltraits/applicants/biologydocuments/bio1994-10/eng/1330979709525/1330979779866">http://www.inspection.gc.ca/plants/plants-withnoveltraits/applicants/biologydocuments/bio1994-10/eng/1330979709525/1330979779866</a>	The Biology of <i>Linum usitatissimum</i> L. (Flax) Biology Document BIO1994-10:	Canadian Food Inspection Agency www.inspection.gc.ca	1994
	3.				

Appendix No.3		<b>Syllabus for the first, second and third cycle of study</b>			
1.	<b>Course title</b>	<b>Growing spices, aromatic and medical herbs</b>			
2.	<b>Course code</b>	2ZF211312			
3.	<b>Study programme</b>	Field crops			
4.	<b>Organizer of the study programme (faculty, institute, group)</b>	Faculty of Agriculture, University "Goce Delcev"-Stip, Department of Plant production			
5.	<b>Level (first, second, third cycle)</b>	Second cycle			
6.	<b>Academic year / semester</b>	First year/ second semester	7.	Number of ECTS credits	4
8.	<b>Professor</b>	Prof. Ljupco Mihajlov, PhD			
9.	<b>Preconditions for course enrollment</b>	No			
10.	<b>Goals of the course programme:</b> Significance, historical development, morphology, biology, growing technique and post-harvest technology of spices, aromatic and medical herbs				
11.	<b>Content of the course programme:</b> <b>Lectures:</b> (1) Introduction (tasks and causes for the course); (2) Significance, origin and production of most significant spices, aromatic and medical herbs in the world; (3) groups of spices, aromatic and medical herbs; (4) Morphology and development stages of most significant spices, aromatic and medical herbs; (5) Susceptibility of spices, aromatic and medical herbs on external influence factors; (6) Mineral nutrition in commercially grown spices, aromatic and medical herbs; (7) Common growing techniques of spices, aromatic and medical herbs; (8) Irrigation of spices, aromatic and medical herbs; (9) Seed production of spices, aromatic and medical herbs; (10) Pests and diseases in spices, aromatic and medical herbs; (11) Harvesting of spices, aromatic and medical herbs; (12) Post-harvest technology of spices, aromatic and medical herbs. <b>Practices:</b> (1) Soil tillage techniques suitable to spices, aromatic and medical herbs; (2) Calculating of fertilizer quantities for achieving targeted yield of spices, aromatic and medical herbs; (3) Calculating seed quantities in spices, aromatic and medical herbs; (4) Sowing techniques in growing spices, aromatic and medical herbs; (5) Applying fertilizers in growing spices, aromatic and medical herbs; (6) Herbicide application in growing spices, aromatic and medical herbs; (7) Insecticide application in growing spices, aromatic and medical herbs; (8) Fungicide application in growing spices, aromatic and medical herbs; (9) Seed preparation procedure in growing spices, aromatic and medical herbs; (10) Criteria in evaluation of control of seed-production of spices, aromatic and medical herbs; (11) Use of spices, aromatic and medical herbs; (12) Methods of selection, hybridization in spices, aromatic and medical herbs.				
12.	<b>Methods of study:</b> Lectures, theoretical and laboratory exercises, consultations, e-learning, individual and team projects, e-learning, prepare lecture for exams.				

13.	<b>Total amount of available time</b>		120 hours		
14.	<b>Distribution of the available time</b>		2+1+1		
15.	<b>Forms of teaching activities</b>	15.1.	Lectures - theoretical training	2	
		15.2.	Exercises (laboratory, auditory), workshops, outreach and teamwork	1	
16.	<b>Other forms of activities</b>	16.1.	Team projects	/	
		16.2.	Individual projects	0.5	
		16.3.	Individual study	0.5	
17.	<b>Forms of assessment</b>				
	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.	<b>Criteria for assessment (points / grade)</b>		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.	<b>Condition for getting a signature and taking the final exam</b>		60% success level on all pre-exam activities		
20.	<b>Language in which classes are conducted</b>		Macedonian		
21.	<b>Method of monitoring the quality of instruction</b>		Self-evaluation, Periodic tests for students, Survey		
22.	<b>Literature</b>				
22.1.	<b>Compulsory literature</b>				
	Ordinal No.	Author	Title	Publisher	Year
	1.	Gorgievski J.	Industrial crops	University textbook, Ss. Cyril and Methodius University, Skopje	1975
	2.	Egumenovski P. et all.	Special field crops	Culture Skopje	1989
	3.	Kire Stojcevski	Guide for growing aromatic and medical herbs	Group for medical herbs, DR. JOVAN TUCAKOV, Sokobanja	2011
	4	Monographs	Mint Chamomile Sage	Insitute for growing medical herbs, Beograd	1997 1998 1999

<b>Additional literature</b>				
Ordinal No.	Author	Title	Publisher	Year
1.	Peter H. Canter	Bringing medical plants into cultivation: opportunities and challenges for biotechnology. ScienceDirect TRENDS in Biotechnology Vol.23 No.4		2005
2.	Ci-Tang Ho, Djen Cun Lin, Cun Ju Zeng	Oriental species food and plants (chemical composition and effects on health)	Tabernakul (Part the project Government of the Republic of Macedonia Translation 500 professional, scientific Books and Textbooks of which is taught in top Universities. in the U.S. and EU	2009
3.				