1. Title of course	Ecoclimatology		
2. Code	ШФ101		
3. Study program	Forestry; Landscape design; Eco-engineering and eco-management		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 1 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Nikola Nikolov			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) The aim of this subject is preparation of students for the fields of Meteorology and Climatology, i.e. to learn about physics of the atmosphere and genesis of all its phenomena (wind, rain, clouds etc.). Also, enabling students for analyzes of data gathered by measurements of some elements important for the study program. In the end, all of this to be synthetized and be in function of the study program.			
11. Course content Basics of the atmosphere; Sources of radial and thermo energy; Warming of the Earth and atmosphere; Air pressure; Water steam in the atmosphere; Fog and clouds; Precipitations; Air circulation; Instruments for measurements of some meteorological elements; Climate, soil and plant; Meteorological elements data processing. Practical education: During the exercises the students will learn about the instruments that are used for measurements of some meteorological elements and how to process the data got by them. Field education: Visit of the meteorological station in the frame of HMS.			
12. Learning methods Audio and audio-visual Practical lectures and practical exercise with meteorological instruments.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	5 (3+2) / 75		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		40 hours
	16.2. Individual tasks		25 hours
	16.3. Home learning		20 hours
17. Assignments and grading	17.1. Seminar work / project	up to 30 points	
	17.2. Active participation in classes	up to 10 points	
	17.3. Final exam	up to 60 (3x60:3) points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2. and 17.1 min 13 points; 17.2 min 6 points; 17.3 min 33 points		

20. Language in which lectures are held			Macedonian (optional English)		
21. Methods of monitoring the quality of teaching			Internal evaluations and surveys		
22. Literature					
	22.1.	**Compulsory literature**			
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Nikolov, N.	Ecoclimatology	internal script	**2011**
		2.	Lazarevski, A.	Climate of Macedonia	Kultura Skopje	**1993**
	22.2.	**Additional literature**			
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Bgurchik, P.	Forestry ecoclimatology	Faculty of forestry Belgrade	**1995**
		2.				

1. Title of course	Botany		
2. Code	ШФ102		
3. Study program	Forestry; Landscape design; Eco-engineering and eco-management		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 1 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Full Prof. Dr. Jane Acevski (Asst. Prof. Dr. Bojan Simovski, appointed since 2015/2016)			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Introduction to cytology and histology of plants, anatomical and morphological plant structure, basic physiological processes, as well as systematics, ecology and evolution of plants. Gained knowledge is applied in biological disciplines.			
11. Course content Theoretical classes: Importance of botany. Occurrence and evolution of life on Earth. Common features of living matter. The importance of plants for nature and mankind. Differences between plants and animals. A plant cell and the cell cycle. Tissue. Vegetative organs. Reproductive organs. Pollination. Fertilization. Spreading and colonization. Photosynthesis. Breathing. Water regime. Growth. Organogenesis. Correlation between plant morphology and ecology. Distribution. Taxonomy and Systematics. Practical classes: Introduction to cytology, histology and anatomy of plants through guided observation of specimens of various plant parts; Introduction to morphology and systematics of certain plant groups using herbarium exemplars; Field research.			
12. Learning methods Interactive lectures and exercises, guided observation of specimens of various plant parts; Introduction to morphology and systematics of certain plant groups using herbarium exemplars; Field research, preparation of field reports, individual presentation (.ppt) and paper work, and via consultations.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	7 (4+3) / 105		
15. Teaching activities	15.1. Lectures (theory)		60 hours
	15.2. Practice (laboratory, auditory), seminars, team work		45 hours
16. Other forms of activities	16.1. Project tasks		/ hours
	16.2. Individual tasks		35 hours
	16.3. Home learning		20 hours
17. Assignments and grading	17.1. Seminar work / project	up to 10 points	
	17.2. Active participation in classes	up to 20 points	
	17.3. Final exam	up to 70 (2x30/60+10) points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2.		
20. Language in which lectures are held	Macedonian (optional English)		

21.	**Methods of monitoring the quality of teaching**		Internal evaluations and surveys			
22.	**Literature**					
	22.1.	**Compulsory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Групче Р.	Ботаника	Студентски збор, Скопје	1994
	22.2.	**Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Mišić Lj., Lakušić R.	Livadske biljke	Zavod za udžbenike i nastavna sredstva, Sarajevo / Beograd	1990
		2.	Šilić Č.	Šumske zeljaste biljke	Zavod za udžbenike, Sarajevo / Školjska knjiga, Zagreb / Vuk Karadžić, Beograd	1977
		3.	Šilić Č.	Planinske biljke	Zavod za udžbenike i nastavna sredstva, Sarajevo / Beograd	1982

1. Title of course	Introduction to construction		
2. Code	ШФ103		
3. Study program	Forestry; Landscape design; Eco-engineering and eco-management		
4. Organizer of the study program	UKIM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 2 (summer semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Zdravko Trajanov			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) The objectives of the course is to introduce the students to the issues of: construction materials, structures and objects encountered in the practice of the study program.			
11. Course content Introduction, aim and task of this course; Measures and measurement systems; Statics (Basic concepts and laws); kinematics; dynamics; Strength of materials; Basic concepts and procedures for dealing with stability of an object in practice. Construction materials (Origin of material properties of construction materials, Processing of materials); Stone as a building material; Wood as a building material; Construction; Construction buildings; Legal proceedings for building facility; planning documentation for construction of the facility; Meeting with the role and function of the items most commonly encountered in practice.			
12. Learning methods Teaching is conducted in the form of a lecture (introduction to the theory of the course) exercises (preparation of study - basic concepts and problems of statics and strength of materials) terrain teaching - exercises (visit the site for stone quarry, store construction materials sawmill)			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	5 (3+32)/75		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		/
	16.2. Individual tasks		30 hours
	16.3. Home learning		55 hours
17. Assignments and grading	17.1. Seminar work / project	80 points (2x40)	
	17.2. Active participation in classes	10 points	
	17.3. Final exam	10 points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2.		
20. Language in which lectures are held	Macedonian		
21. Methods of monitoring the quality of teaching	Internal evaluations and surveys		

22.	Literature					
		Compulsory literature				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
	22.1.	**1.**	Z. Trajanov	Introduction to construction - authorized textbook	Faculty of Forestry – Skopje	2010
		2.	N. Boled	Forest construction	Faculty of Forestry – Skopje	1964
		Additional literature				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
	22.2.	**1.**	M. Simonovic	Technical mechanic	Faculty of Forestry – Belgrade	1989
		2.	B. Dulic	Statics and strength of the materials	Prosfetno delo	1978

1. Title of course	Foresters pedology with petrography		
2. Code	ШФ104		
3. Study program	Forestry; Landscape design; Eco-engineering and eco-management		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 2 (summer semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Kole Vasilevski			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Introducing the students with the soils as a natural historical body and as one of the fundamental means of production in forestry, but also introducing the subsoil (geological foundation) on which soils are formed.			
11. Course content Teaching material covers the following topics: Introduction, Creation of the mineral and organic component of the soil, Subsoil / geological substrate (minerals and rocks), Mineralogical composition of the soil, Mechanical composition, Living organisms and their importance, Decomposition, Sorption ability of the soil, Soil solution, Basic physical properties of solid soil, Soil water, Soil air, Heat, Fertility, Pedogenetic factors, Pedogenetic processes, Evolution of soils, Soil morphology, Classification of soils and classification systems, Systematics of soils, Soil geography, Productive capability and protection of soils, Literature.			
12. Learning methods Teaching is conducted in the form of lecture, lab exercises, consultations, training and field exercises.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	7 (4+3) / 105		
15. Teaching activities	15.1. Lectures (theory)		60 hours
	15.2. Practice (laboratory, auditory), seminars, team work		45 hours
16. Other forms of activities	16.1. Project tasks		/
	16.2. Individual tasks		25 hours
	16.3. Home learning		30 hours
17. Assignments and grading	17.1. Seminar work / project	up to 20 points	
	17.2. Active participation in classes	up to 20 points	
	17.3. Final exam	up to 60 (4x15/60) points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2.		
20. Language in which lectures are held	Macedonian (optional English)		
21. Methods of monitoring the quality of teaching	Internal evaluations and surveys		

22. Literature

Compulsory literature

	No.	Author/s	Title	Publisher	Year
22.1.	**1.**	Филиповски, Ѓ.	Педологија	МАНУ – Скопје	
	2.	Антиќ, М.	Педологија за шумари	Универзитет во Белград, Шумарски факултет	
	3.	Паниќ, Ј.	Основи на петрографија	Универзитет во Белград, Шумарски факултет	

Additional literature

	No.	Author/s	Title	Publisher	Year
22.2.	**1.**	Ќириќ, М.	Педологија	Универзитет во Белград, Шумарски факултет	
	2.	Vasilevski, K.	E-materials of Pedology with petrography	UKIM FoF (auth. e-lect.)	2012

1. Title of course	Dendrology		
2. Code	ШФ106		
3. Study program	Forestry; Landscape design; Eco-engineering and eco-management		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 2 (summer semester)	**7. Number of ECTS:** 6		
8. Lecturer: Full Prof. Dr. Jane Acevski			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Dendrology (science specialized for the characteristics of the woody plants) is a fundamental subject in the field of forestry. By studying this course, students learn knowledge of forest trees and shrubs of indigenous dendroflora (autochtoon species) and some important economic species of the non-indigenous dendroflora (allochtoon species). Gained knowledge is applied in biological disciplines.			
11. Course content The study material is divided into two parts: general and special section material. The general part elaborates the description of the most important organs of plants (Morphological characteristics); Division of the woody plants according to their dimensions and habitus; Nomenclature; Distribution (natural range); Forest formations of the globe. The second more specialized and detailed section is discussed about plant's classification into systematic types (according to Tahtadjian), with special emphasis on the following characteristics for each species: Systematics; Distribution (native range); Morphological characteristics; Reproduction; Ecological characteristics; Economic importance. Gymnosperms/Coniferous plants (Gymnospermae); Angiosperms/Flowering plants (Angiospermae).			
12. Learning methods Theoretical classes, laboratory and field classes, field exercises, visit of living plant and herbarium collections (arboreta, woody parks, forests, green houses and alpine houses); Field research, preparation of field reports and paper work, and via consultations.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	7 (4+3) / 105		
15. Teaching activities	15.1. Lectures (theory)		60 hours
	15.2. Practice (laboratory, auditory), seminars, team work		45 hours
16. Other forms of activities	16.1. Project tasks		/ hours
	16.2. Individual tasks		35 hours
	16.3. Home learning		20 hours
17. Assignments and grading	17.1. Seminar work / project	/	
	17.2. Active participation in classes	up to 30 points	
	17.3. Final exam	up to 70 (2x30/60+10) points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2.		

20. Language in which lectures are held			Macedonian		
21. Methods of monitoring the quality of teaching			Internal evaluations and surveys		
22. Literature					
	Compulsory literature				
	No.	**Author/s**	**Title**	**Publisher**	**Year**
22.1.	**1.**	Џеков С.	Дендрологија	УКИМ-ШФС, Скопје	1988
	2.	Ем Х.	Преглед на дендрофлората на Македонија	Сојуз на шумарски инженери и техничари, Скопје	1967
	Additional literature				
	No.	**Author/s**	**Title**	**Publisher**	**Year**
22.2.	**1.**	Acevski J., Simovski B.	E-materials of Dendrology	UKiM FoF (auth. e-lect.)	2012
	2.	Šilić Č.	Atlas drveća i grmlja	Zavod za udžbenike i nastavna sredstva, Sarajevo / Beograd	1990
	3.	Idžojtić M.	Dendrologija – list	Šumarski fakultet, Sveučilište u Zagrebu, Zagreb	2009
	4.	Samuelson L. J., Hogan M. E.	Forest trees, a guide to the Eastern United States	Pearson Education Inc., New York	2006

1. Title of course	Protection of forests and other green areas		
2. Code	ШФ107		
3. Study program	Forestry; Landscape design; Eco-engineering and eco-management		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 8 (summer semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Nikola Nikolov			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) The basic aim of the subject is to prepare students in the field of forest protection and protection of other green areas, mainly on recognition of causes and damages of abiotic, biotic and anthropogenic character. The ultimate goal is introduction to measures of protection against above mentioned factors.			
11. Course content Damages caused by abiotic factors and measures of protection; Damages caused by biotic factors and measures of protection; Phytopharmacy; Damages caused by anthropogenic factor and measures of protection; Climate change and air pollution; Forest fire protection and fire protection of other green areas Practical education: One day visit of certain location in Macedonia (the choice depends of the current year). In the frame of the stationary education, one day as well, assessment of the trees health condition and preparation of an appropriate elaborate. Visit of the City park in Skopje and Park forest Vodno.			
12. Learning methods Audio and audio-visual Theoretical lectures and practical exercises in classroom and outside			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	5 (3+2) / 75		
15. Teaching activities	15.1. Lectures (theory)		60 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		10 hours
	16.2. Individual tasks		20 hours
	16.3. Home learning		40 hours
17. Assignments and grading	17.1. Seminar work / project	up to 30 points	
	17.2. Active participation in classes	up to 10 points	
	17.3. Final exam	up to 60 [(3x60):3] points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2. and 17.1 min 33 points; 17.2 min 6 points; 17.3 min 33 points		

20. Language in which lectures are held			Macedonian (optional English)		
21. Methods of monitoring the quality of teaching			Internal evaluations and surveys		
22.	**Literature**				
	Compulsory literature				
	22.1.	**No.**	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Nikolov, N.	Forest and other green areas protection	internal script	**2011**
		2.	Nikolov, N.	Forest and other green areas fire protection	Fire protection union of Macedonia	**2013**
		3.	Branko, B.	Phytopharmacy	Nasa kniga	**1981**
	Additional literature				
	22.2.	**No.**	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Group of authors	Air pollution and forest ecosystems	Faculty of forestry Belgrade	**1994**
		2.				

1. Title of course	Phytosociology			
2. Code	ШФ111			
3. Study program	Forestry; Landscape design; Eco-engineering and eco-management			
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje			
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate			
6. Semester: 3; 3,5 (winter semester)	**7. Number of ECTS:** 6			
8. Lecturer: Full Prof. Dr. Jane Acevski				
9. Preconditions for enrollment of the subject	none			
10. Course objectives (competences) Phytosociology (science of plant communities) is a fundamental teaching discipline. By learning this course, students are acquainted with the forest communities that are prevalent in the country, their systematic affiliation, floristic composition, structure, and distribution and natural adaptation to specific site conditions. Gained knowledge is applied in biotechnical disciplines.				
11. Course content The study material consists of: Morphology of forest communities; Stand ecology (synecology); Stand dynamics (syndynamics); Synchronology; Synhorology; Classification (systematics) of forest communities; Typology of forests and pastures (an introduction).				
12. Learning methods Theoretical classes, field exercises, visit of forests and national parks; Field research, preparation of field reports and paper work, and via consultations.				
13. Total available time (duration of course)	160 hours			
14. Distribution of the available time	5 (3+2) / 75			
15. Teaching activities	15.1. Lectures (theory)			45 hours
	15.2. Practice (laboratory, auditory), seminars, team work			30 hours
16. Other forms of activities	16.1. Project tasks			40 hours
	16.2. Individual tasks			25 hours
	16.3. Home learning			20 hours
17. Assignments and grading	17.1. Seminar work / project	up to 10 points		
	17.2. Active participation in classes	up to 30 points		
	17.3. Final exam	up to 60 (2x30/60) points		
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2.			
20. Language in which lectures are held	Macedonian			
21. Methods of monitoring the quality of teaching	Internal evaluations and surveys			
22. Literature				
22.1.	**Compulsory literature**			

	No.	Author/s	Title	Publisher	Year
	1.	Ризовски Р.	Фитоценологија со основи на типологија на шумите и пасиштата	УКИМ-ШФС, Скопје (авторизирани предавања)	1999
22.2.	**Additional literature**				
	No.	**Author/s**	**Title**	**Publisher**	**Year**
	1.	Acevski J., Simovski B.	E-materials of Phytosociology	UKiM FoF (auth. e-lect.)	2012
	2.	Rauš Đ.	Šumarska fitocenologija	Šumarski fakultet, Sveučilište u Zagrebu, Zagreb	1987
	3.	Stefanović V.	Fitocenologija	Zavod za udžbenike i nastavna sredstva, Sarajevo	1986

1. Title of course	Entomology		
2. Code	ШФ112		
3. Study program	Forestry, Landscape Design		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 4 (summer semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Sterja Načeski			
9. Preconditions for enrollment of the subject	None		
10. Course objectives (competences) It aims to introduce students to morphology, anatomy, biology of insects, bioecology of certain types of harmful and beneficial insects, damages caused on forest tree species and the measures and methods that are taken for their suppression.			
11. Course content General part: Morphology, Anatomy and Physiology of insects, Biology of insects, Reproduction, Development and metamorphosis of insects. Special part: Studying the morphology and systematic of certain species of forest insects of subclass Apterygota, Ordo.: Protura, Diplura, Collembola, Thysanura); Subclass. Pterygota, sek. Exopterygota – Ordo:Odonata, Ephemeroptera, Blattodea, Isoptera, Mantodea, Zoraptera, Dermaptera, Orthoptera, Phasmida, Homoptera, Heteroptera; Sek. Endopterygota, Ord.: Rhaphidioptera, Neuroptera, Red Coleoptera, Fam.: Cicindelidae, Carabidae, Staphlinidae, Lucanidae, Scarabaeidae,Buprestidae, Elateridae, Ciccindelidae, Lymexylidae, Cleridae, Anobiidae, Bostrychidae, Meloidae,Cerambycidae, Chrysomelidae, Curculionidae, Platypodidae, Scolytidae; Ordo Lepidoptera, Subordo Microlepidoptera, Fam.: Tischeridae, Gracilariidae, Coleophoridae, Hyponomeutidae, Tortricidae, Plutelidae, Argyresthiidae, Pyralidae, Cossidae, Sesiidae; Ordo Macrolepidoptera, Fam.: Geometridae, Acrididae, Noctuidae, Lymantridae, Lasiocampidae, Thaumatopoeidae, Notodontidae, Sphingidae, Ordo Hymenoptera, Subordo Symphita, Fam.: Pamphiliidae, Tenthredinidae, Cimicidae, Diprionidae, Siricidae, Subordo Terebrantia, Entomofaga, Grupa Cynipoidae, Subordo Aculeata, Fam.Formicidae, Vespidae, Apidae, Sphaengidae; Ordo Diptera, Subordo. Nematocera, Fam.: Tipulidae,			
12. Learning methods Interactive lectures and exercises, guided observation of specimens of various insects; Introduction to morphology, anatomy, biology, ecology and systematics of pest insects, parasitical and predatorial insects; Field research, preparation of field reports, individual presentation (ppt) and paper work, and via consultations.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	4 (3+3)		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		45 hours
16. Other forms of activities	16.1. Project tasks		10 hours
	16.2. Individual tasks		25 hours
	16.3. Home learning		35 hours
17. Assignments and grading	17.1. Seminar work / project	up to 20 points	
	17.2. Active participation in classes	up to 20 points	
	17.3. Final exam	up to 60 (2x30/60) points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2.
20. Language in which lectures are held	Macedonian
21. Methods of monitoring the quality of teaching	Internal evaluations and surveys

22. Literature

22.1. Compulsory literature

No.	Author/s	Title	Publisher	Year
1.	Ljupka Hadzi-Ristova	Forest entomology (1 and 2 part)	UKIM-Skopje	**1995**
2.	Ljubodrag Mihajlović	Forest entomology	University of Belgrade FF-Belgrade	**2008**

22.2. Additional literature

No.	Author/s	Title	Publisher	Year
1.	Robert N. Coulson, John A. Witter	Forest Entomology	Wiley-Intersciense Publication John Wiley & Sons, New York, Toronto	**1984**
2.	R. Tomov, S. Naceski, I. Papazova, Marc Kenis ...	Non-indigenous insects and their threat to biodiversity and economy in Albania, Bulgaria and R. of Macedonia	Pensoft, Sofia - Moscow	**2009**
3.	Moloje Krunііć	Zoology of invertebrates -Part II	Naučna Knjiga, Beograde	**1989**

1. Title of course	Phytopathology		
2. Code	ШФ113		
3. Study program	Forestry; Landscape design		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 3 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Kiril Sotirovski			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) To present ot students basic principles of forest pathology, as well as the most important diseases of forest vegetation in Macedonia, their cause and methods of control.			
11. Course content Theoretical lectures: The fundamental chapters of forest pathology present symptomatology, mechanisms of infection of plant pathogens, interactions between the host-plant and pathogen, epidemiology, biology and reproduction of plant pathogens, mechanisms of resistance in plants. The curriculum also covers basics of systematics of fungi, as well as basics in bacteriology and virology. Also, principles of plant protection are covered (administrative, quarantine, sylvicultural methods, biological control), with focus on use of fungicides. Several plant pathogens of greater importance are presented in the curriculum: *Apiognomonia veneta*; *Armillaria spp*.; *Cryphonectria parasitica*; *Fusarium spp*.; *Heterobasidion annosum*; *Microsphaera alphitoides; Melampsora allii-populina; Melampsorella caryophyllacearum; Ophiostoma ulmi; Phytophthora spp.; Seiridium cardinale*. Presented are also bacterial diseases (*Agrobacterium tumefaciens*, *Erwinia spp*.) and parasitic plants *Cuscuta spp*. and semi-parasites *Viscum album* and *Loranthus europaeus*. Practical classes: By use of native and prepared microscopic samples students are introduced to basic morphological characteristics of the vegetative and reproductive aspects of fungi. Basic aspects of symptomatology are presented through drawings, photos or collection samples, while the same methods are used for covering most species of pathogenic fungi, parasitic and semi-parasitic plant species planned in the curriculum. Field classes: Visits of sites in Macedonia with examples of forest diseases, as well as forest nurseries.			
12. Learning methods Theoretical classes and practical classes with samples in the microscopy classroom.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	Number of contact classes in week and semester 6 (3+3) / 90		
15. Teaching activities	15.1. Lectures (theory)		40 + 5 hours Classroom + field classes
	15.2. Practice (laboratory, auditory), seminars, team work		40 + 5 hours Classroom + field classes
16. Other forms of activities	16.1. Project tasks		10 hours
	16.2. Individual tasks		10 hours
	16.3. Home learning		50 hours
17. Assignments and grading	17.1. Partial tests	up to 60 points (3 x 20)	
	17.2. Seminar work / project	up to 20 points	
	17.3. Active participation in classes	up to 20 points	

18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Condition for signature: Presence and activity in all forms of classes (lectures, practical, field), accomplished minimum 60% of point from the first partial exam – recognition of pathogens) Condition for passing exam: Verification signature, accomplished minimum 50% of the second and 50% of third partial exam, i.e. a total minimum of 51 point (%) from partial exams (three) or final exam.
20. Language in which lectures are held	Macedonian (optional English)
21. Methods of monitoring the quality of teaching	-questionnaire for students; -questionnaire for lecturers, -external evaluations -self evaluation

22. Literature

Compulsory literature

	No.	Author/s	Title	Publisher	Year
22.1.	**1.**	Uscuplic, M., Sotirovski, K., Risteski, M.	Pathology of forest and ornamental tree species	Internal textbook	**2009**
	2.	Sotirovski, K.	Forest pathology	Internal textbook	**2009**
	3.	Sotirovski, K; Papazova Anakieva, I.	Working book for practical classes	Internal workbook	**2009**

Additional literature

	No.	Author/s	Title	Publisher	Year
22.2.	**1.**				
	2.				

1. Title of course	Zooecology and systematics of game animals		
2. Code	ШФ114		
3. Study program	Forestry; Eco-engineering and eco-management		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 3 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Full Prof. Dr. Vladimir Maletic			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Study of zoology and zooecology of wild game animals and their place and importance in the ecosystem. Acquiring knowledge of law, expert and scientific classification of the game and its morphology, ethology and bioecology.			
11. Course content Basics of general zoology; General characteristics of animal organisms; Histology and Organology; Basics zooecology (environment, environmental factors, population and its basic features, biocenoses, nutrition relationships in biocenoses, ecosystems). Classification of the game (law, technical and scientific); Morphology and the bioecology of the game (Mammalia: Artiodactyla, Lagomorpha, Rodentia, Carnivora; Aves: Gruiformes, Galliformes, Columbiformes, Charadriiformes, Anseriformes, Ciconiiformes, Pelecaniformes, Accipitriformes, Falconiformes, Strigiformes, Passeriformes).			
12. Learning methods Theoretical classes, assignments, laboratory and field exercises, field work and consultations.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	5 (3+2)/75		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		
	16.2. Individual tasks		40 hours
	16.3. Home learning		45 hours
17. Assignments and grading	17.1. Seminar work / project	up to 25 points	
	17.2. Active participation in classes	up to 5 points	
	17.3. Final exam	up to 70 points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Requirement for signature: Attendance and participation in all forms of teaching (lectures, laboratory exercises and field) with at least 3 points. Requirement for passing the final exam: Gained requirement for signature, passed theoretical part (two partial exams / final exam) and practice (colloquium) with at least 48 points. The final exam is not mandatory, i.e. it is predicted for students who have acquired only the signature		

			in index / not passed through the three partial exams and for students who want to improve the success achieved through continuous verification during the semester.		
20.	**Language in which lectures are held**		Macedonian		
21.	**Methods of monitoring the quality of teaching**		Internal evaluations and surveys		
22.	**Literature**				
	22.1.	**Obligatory literature**			
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Trpkov B.	Lovstvo (Hunting; in (Macedonian)	UKIM	1985
		2.				
	22.2.	**Reccomended/ Additional literature**			
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	M. Androić	Osnovi zooekologije (Basics of zooecology; in Croatian)	PUŠPO - Zagreb	1970
		2.	R. Papović, J. Šapkarev	Animalna ekologija (Animal ecology; in Serbian)	Naučna knjiga – Beograd	1985
		3.	M. Đukanović	Ekoloski izazov (Ecological challenge; in Serbian)	Elit – Beograd	1991

1. Title of course	General and landscape ecology		
2. Code	ШФ115		
3. Study program	Forestry; Landscape design; Ecoengineering and Ecomanagement		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	undergraduate		
6. Semester: 2 (summer semester)	**7. Number of ECTS:** 6		
8. Lecturer: Assoc. Prof. Dr. Irena Papazova-Anakieva			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Students will develop knowledge of basic concepts in ecology and environmental geography, ability to make a scientific argument and support it with appropriate evidence, and also understanding of the relevance of ecology to society. This course will also improve ecological literacy by learning the basic facts, principles and concepts of the field of landscape ecology.			
11. Course content The course covers topics in the areas of individual, population, community, and ecosystem ecology, as well as humanity's effect on natural systems. Introduction to basic principles of ecology, and the use of these principles to predict possible consequences and uncertainties associated with human-caused changes in the environment. We will examine both biotic (living) and abiotic (non-living) elements of the environment that influence the distribution and abundance of organisms. Fundamental concepts of landscape ecology which serve as foundations for decision-making and problem solving in applied fields such as conservation biology, land-use management, and urban planning and development.			
12. Learning methods Theoretical classes; practical field and laboratory work, field exercises, visit of forests and national parks; Field research, preparation of field reports and paper work, and via consultations.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	5 (3+2) / 75		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		10 hours
	16.2. Individual tasks		30 hours
	16.3. Home learning		45 hours
17. Assignments and grading	17.1. Seminar work / project	up to 20 points	
	17.2. Active participation in classes	up to 20 points	
	17.3. Final exam	up to 60 points	
18. Evaluation criteria (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.	**Conditions for signature (verification of attendance of classes) and final exam**		Fulfillment of activities from 15.1 and 15.2.		
20.	**Language in which lectures are held**		Macedonian		
21.	**Methods of monitoring the quality of teaching**		Internal evaluations and surveys		
22.	**Literature**				
	22.1.	**Compulsory literature**			
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	I. Papazova-Anakieva	General and landscape ecology (internal textbook)	UKIM - FOF	2012
		2.				
	22.2.	**Additional literature**			
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Wu, J. and R. Hobbs (eds.)	Key Topics in Landscape Ecology	Cambridge University Press, Cambridge, UK.	2007
		2.	Turner, M. G., Gardner, R. H. and O'Neill, R. V.	Landscape Ecology in Theory and Practice: Pattern and Process.	Springer-Verlag, New York	2001

1. Title of course	Afforestation		
2. Code	ШФ116		
3. Study program	Eco-engineering and eco-management		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 4 (summer semester)	**7. Number of ECTS:** 6		
8. Lecturer: Full Prof. Dr. Dana Dina Kolevska			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Seed Science, Nursery production and Afforestation Students will gain basic knowledge about afforestation and reforestation. Gained knowledge will be applied in various biological and biological - technical disciplines.			
11. Course content The study material is divided into two parts: 1. Basics of forest seedlings production (basics of forest seed science and forest nurseries production); 2. Afforestation and reforestation (aim and purpose of afforestation and reforestation, types of sylvicultures; biological and technical - technological aspects of afforestation and reforestation; tending measures in forest cultures)			
12. Learning methods Theoretical classes, assignments, preparation of elaborates, individual presentation (.ppt) and paper work, laboratory and field exercises in nurseries and in afforestation, field work and consultations.			
13. Total available time (duration of course)	150 hours		
14. Distribution of the available time	5 (2+3)/75		
15. Teaching activities	15.1. Lectures (theory)		30 hours
	15.2. Practice (laboratory, auditory), seminars, team work		45 hours
16. Other forms of activities	16.1. Project tasks		
	16.2. Individual tasks		35 hours
	16.3. Home learning		45 hours
17. Assignments and grading	17.1. Seminar work / project	up to 25 points	
	17.2. Active participation in classes	up to 5 points	
	17.3. Final exam	up to 70 points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Requirement for signature: Attendance and participation in all forms of teaching (lectures, laboratory exercises and field) won with at least 3 points. Requirement for passing the final exam: Gained requirement for signature, passed the theoretical part (two partial exams / final exam, minimum 36 points) and worked up an elaborate (minimum 12 points), i.e. a total of minimum 51 points.		

			The final exam is not mandatory, i.e. it is predicted for students who have acquired only the signature in index / not passed through the two partial exams and for students who want to improve the success achieved through continuous verification during the semester.		
20.	**Language in which lectures are held**		Macedonian		
21.	**Methods of monitoring the quality of teaching**		Internal evaluations and surveys		
22.	**Literature**				
	22.1.	**Obligatory literature**			
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Popovski P.	Seed science, nursery production and afforestation (in Macednian)	UKIM, FofF, Skopje	1990
		2.	Kolevska D.D.	Sylviculture (in Macednian)	Internal textbook	2011
		3.	Stilinovic S..	Afforestation (in Serbian)	Научна књига Белград	1991
	22.2.	**Reccomended/ Additional literature**			
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.				
		2.				

1. Title of course	Production of decorative plants		
2. Code	ШФ133		
3. Study program	Landscape design		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 4 (summer semester)	**7. Number of ECTS:** 6		
8. Lecturer: Full Prof. Dr. Dana Dina Kolevska			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Students will gain knowledge about biological and technical-technological aspects of ornamental plants production. Gained knowledge will be applied in various biological and biological - technical disciplines.			
11. Course content The study material is divided into two parts: 1. Propagation of ornamental plants and 2. Ornamental plants production. 1. Propagation of ornamental plants: seed science of ornamental plants; Generative and vegetative propagation. 2. Ornamental plants production: Organization of nurseries; Production facilities; technologies of ornamental plants production; Agro-technical and agro meliorative operations in nurseries; Production of seedlings of trees and shrubs; Production of roses; Production of flowers and other ornamental plants.			
12. Learning methods Theoretical classes, assignments, preparation of elaborates, individual presentation (.ppt) and paper work, laboratory and field exercises in nurseries, field work and consultations.			
13. Total available time (duration of course)	150 hours		
14. Distribution of the available time	5 (3+2)/75		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		
	16.2. Individual tasks		40 hours
	16.3. Home learning		45 hours
17. Assignments and grading	17.1. Seminar work / project	up to 35 points	
	17.2. Active participation in classes	up to 5 points	
	17.3. Final exam	up to 60 points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Requirement for signature: Attendance and participation in all forms of teaching (lectures, laboratory exercises and field) won with at least 3 points. Requirement for passing the final exam: Gained requirement for signature, passed the theoretical part (two partial exams / final exam, minimum 36 points) and practice (colloquium at least 6 points), worked up an elaborate (minimum 6 points), i.e. a total of minimum 51 points.		

				The final exam is not mandatory, i.e. it is predicted for students who have acquired only the signature in index / not passed through the two partial exams and for students who want to improve the success achieved through continuous verification during the semester.		
20.	**Language in which lectures are held**			Macedonian		
21.	**Methods of monitoring the quality of teaching**			Internal evaluations and surveys		
22.	**Literature**					
	22.1.	**Obligatory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Kolevska D.D.	Seed science and production of ornamental plants (in Macedonian	Internal textbook	2001
		2.	Rizovska Atanasovska J.	Perrenial and annual plants (in Macedonian)	Internal textbook	2001
		3.				
	22.2.	**Reccomended/ Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Stilinovic S.	Production of forest and ornamental seedlings (in Serbian)	Универзитет у Београду	1987
		2.	Karasek K.	Greenhouses for flower and nursery production (in Serbian)	Партенон Београд	1999

1. Title of course	Flower arranging		
2. Code	ШФ178		
3. Study program	Landscape design		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 5,7 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Full Prof. Dr. Dana Dina Kolevska			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Students will gain knowledge about using flowers and other materials in flower arrangements. Gained knowledge will be applied in various biological and biological - technical disciplines.			
11. Course content The study material is divided into two parts: 1. Theory and 2. Practice. 1. Theory: Historic development of floral arrangement; Basic concepts in the arrangement; Aesthetic rules in floral arrangement; Styles and trends in the arranging. 2. Practice: Materials and arranging techniques; Floristic disciplines. Types of arrangements (dedicated, seasonal, holiday, religious); Arrangements of fresh and dried flowers.			
12. Learning methods Theoretical and practical classes, assignments, field exercises in floral shops and nurseries, field work and consultations.			
13. Total available time (duration of course)	105 hours		
14. Distribution of the available time	3 (1+2)/45		
15. Teaching activities	15.1. Lectures (theory)		15 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		
	16.2. Individual tasks		32 hours
	16.3. Home learning		28 hours
17. Assignments and grading	17.1. Seminar work / project	up to 35 points	
	17.2. Active participation in classes	up to 5 points	
	17.3. Final exam	up to 60 points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Requirement for signature: Attendance and participation in all forms of teaching (lectures, laboratory exercises and field) won with at least 3 points. Requirement for passing the final exam: Gained requirement for signature, passed the theoretical part (two partial exams / final exam, minimum 36 points) and practice (at least 7 points), worked up an elaborate (minimum 5 points), i.e. a total of minimum 51 points. The final exam is not mandatory, i.e. it is predicted for students who have acquired only the signature		

			in index / not passed through the two partial exams and for students who want to improve the success achieved through continuous verification during the semester.		
20.	**Language in which lectures are held**		Macedonian		
21.	**Methods of monitoring the quality of teaching**		Internal evaluations and surveys		
22.	**Literature**				
	22.1.	**Obligatory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Kolevska D.D.	Flower arranging (in Macedonian)	Internal textbook	2012
		2.				
		3.				
	22.2.	**Reccomended/ Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Barnett F.	Flower arranging (in Serbian)	Лео Београд	
		2.				

1. Title of course	Plant nutrition		
2. Code	ШФ117		
3. Study program	Forestry; Landscape design		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 3,5 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Kole Vasilevski			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Introducing students to natural laws between plants and soil as a basic medium from which they extract nutrients, types of fertilizers, as well as the processes of growth, development and fructification of plants.			
11. Course content Teaching material covers the following topics: Introduction, Properties of the soil in terms of plant nutrition, The mineral and organic part of the soil as a source of food for plants, Adsorptive capacity of the soil (chemical and biological), Movement of soil nutrients, Fertility of the soil with nutritious macro and micro elements, Mineral and organic fertilizers, Types of fertilizers, Protection of fertilizers from losing nutrients, Storage of fertilizers, Foliar fertilizers, Physiologically active substances in plants, Theory of receiving ions from soils, Plant nutrition by macro and micro elements, Fertilization in nursery production, Foliar fertilization, Fertigation, Literature.			
12. Learning methods Teaching is conducted in the form of lecture, lab exercises, consultations, training and field exercises.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	4 (3+1) / 60		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		15 hours
16. Other forms of activities	16.1. Project tasks		/
	16.2. Individual tasks		50 hours
	16.3. Home learning		50 hours
17. Assignments and grading	17.1. Seminar work / project	up to 20 points	
	17.2. Active participation in classes	up to 20 points	
	17.3. Final exam	up to 60 (2x30/60) points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2.		
20. Language in which lectures are held	Macedonian (optional English)		
21. Methods of monitoring the quality of teaching	Internal evaluations and surveys		

22.	Literature					
	22.1.	Compulsory literature				
		No.	Author/s	Title	Publisher	Year
		1.	Vasilevski, K.	E-materials of Plant Nutrition	UKIM FoF (auth. e-lect.)	2012
	22.2.	Additional literature				
		No.	Author/s	Title	Publisher	Year
		1.				
		2.				

1. Title of course	Forestry mechanization		
2. Code	ШФ118		
3. Study program	Forestry		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 3 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Full Prof. Dr. Ljupco Nestorovski			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) The program in this course have goal to introduce the students with basic problems during operating forest machinery. It is specialized with concrete problems in the practice, in order to be able to choose and maintain the existing machinery, as well as introduce new modern and more sophisticated, specialized machines in the technology of forest nursing, harvesting and protection of forests.			
11. Course content Course is divided into Theoretical and Practical topics. Theoretical topics: Introduction (goal and purpose of the course, history of machines); Basics of machine science (motives for mechanization, conditions, energy and forms of energy, laws); Materials(constructive materials, properties, elements); Energetic and working systems (MEC, classification, basic parameters, working cycle, construction, parts); Special machines in forestry (machines for land processing, machines for forest protection, harvesting machinery, building machinery…). Practical topics: Measures and units; Basic materials; Characteristics of machines (speed, pulling strength, stability). Basic principles of work of different machines.			
12. Learning methods Theoretical classes, assignments, preparation of seminar works, individual presentation (.ppt) and paper work, and via consultations.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	5 (3+2) / 75		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		40 hours
	16.2. Individual tasks		25 hours
	16.3. Home learning		20 hours
17. Assignments and grading	17.1. Seminar work / project	up to 10 points	
	17.2. Active participation in classes	up to 10 points	
	17.3. Final exam	up to 90 (2x30+30) or 90 points	
18. Evaluation criteria (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.	**Conditions for signature (verification of attendance of classes) and final exam**			Fulfilment of activities from 15.1 and 15.2.		
20.	**Language in which lectures are held**			Macedonian (optional English)		
21.	**Methods of monitoring the quality of teaching**			Internal evaluations and surveys		
22.	**Literature**					
	22.1.	**Obligatory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	M. Stamenkovski	Motors and tractors	UKIM- FAFS, Skopje	**1986**
		2.	Tanevski D.	Motors and tractors	UKIM- FAFS, Skopje	**2003**
	22.2.	**Reccomended/ Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Lj. Nestorovski	Authorized textbook		**2011**
		2.	Lj. Nestorovski	Practicum		**2011**

1. Title of course	Seed science, nursery production and afforestation		
2. Code	ШФ119		
3. Study program	Forestry		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 4 (summer semester)	**7. Number of ECTS:** 6		
8. Lecturer: Full Prof. Dr. Dana Dina Kolevska			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Students will gain knowledge about seed and seedling production of forest species and the methods and techniques of afforestation and reforestation. Gained knowledge will be applied in various biological and biological - technical disciplines.			
11. Course content The study material is divided into three parts: 1. Forest seed science, 2. Forest nurseries production, 3. Afforestation and reforestation. 1. Forest seeds science: characteristics of the seeds and fruits; forest seed objects; technique and technology of gathering, processing and storage of forest seeds; examination of the quality properties of the seed. 2. Forest nurseries production: types, prerequisites for establishing and organization of forest nurseries; agro-technical and agromeliorative operations in nursery; generative and vegetative propagation of forest species in nurseries. 3. Afforestation and reforestation: aim and purpose of afforestation and reforestation, types of sylvicultures; biological and technical - technological aspects of afforestation and reforestation; tending measures in forest cultures.			
12. Learning methods Theoretical classes, assignments, preparation of elaborates, individual presentation (.ppt) and paper work, laboratory and field exercises in nurseries and in afforestation, field work and consultations.			
13. Total available time (duration of course)	180 hours		
14. Distribution of the available time	6 (3+3)/90		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		45 hours
16. Other forms of activities	16.1. Project tasks		
	16.2. Individual tasks		45 hours
	16.3. Home learning		45 hours
17. Assignments and grading	17.1. Seminar work / project	up to 35 points	
	17.2. Active participation in classes	up to 5 points	
	17.3. Final exam	up to 60 points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Requirement for signature: Attendance and participation in all forms of teaching (lectures, laboratory exercises and field) with at least 3 points. Requirement for passing the final exam: Gained requirement for signature, passed the theoretical part (three partial exams / final exam, minimum 36 points)		

			and practice (colloquium at least 6 points), worked up an elaborate (minimum 6 points), i.e. a total of minimum 51 points. The final exam is not mandatory, i.e. it is predicted for students who have acquired only the signature in index / not passed through the three partial exams and for students who want to improve the success achieved through continuous verification during the semester.		
20.	**Language in which lectures are held**		Macedonian		
21.	**Methods of monitoring the quality of teaching**		Internal evaluations and surveys		
22.	**Literature**				
	22.1.	**Obligatory literature**			
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Popovski P.	Seed science, nursery production and afforestation (in Macedonian)	UKIM, FofF, Skopje	1990
		2.	Kolevska D.D.	Sylviculturae (in Macedonian)	Internal textbook	2011
	22.2.	**Reccomended/ Additional literature**			
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Stilinovic S..	Afforestation (in Serbian)	Научна књига Белград	1991
		2.				

1. Title of course	Basics of wood		
2. Code	ШФ120		
3. Study program	Forestry		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 3,5 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Full Prof. Dr. Mitko Nacevski (Asst. Prof. Dr. Bojan Simovski, appointed since 2015/2016)			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Studying characteristics of wood anatomy which have impacts on wood properties, and create significant knowledge for the wood quality. Use of gained knowledge from disciplines Forest management, Silviculture measures, Forest utilization and Afforestation actions. Gained knowledge is applied in biotechnical disciplines.			
11. Course content Theoretical classes: Introduction to anatomy of wood and wood properties (technical characteristics of wood), classification of wood properties; Wood structure and cellular composition, growth of woody plants, microscopic and sub-microscopic structure of the plant cell membrane and cell wall, chemical composition of wood, annual rings, sapwood and heartwood, pith, embolism, secretory resin structures, anatomy and histology of softwoods (Conifearae) and hardwoods (Angiospermae); False wood and abnormalities caused by abiotic and biotic factors; Basic physical and mechanical properties of wood, porousness, density, moisture, volume, hardness, elasticity, bending strength, compression strength, tension strength, crushing strength; Influence of silviculture and forest utilization on wood quality, wood origin, wood species habitus, age and location in stand, silvicultural measures. Practical classes: Microscopic identification of native softwoods and hardwoods, laboratory identification of three major planes (end-grain, edge-grain and flat-grain); Analysis of basic physical and mechanical wood properties.			
12. Learning methods Interactive lectures and exercises, guided observation of microscopic specimens of various native tree species, individual presentation (.ppt) and paper work, and via consultations.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	3 (2+1) / 45		
15. Teaching activities	15.1. Lectures (theory)		30 hours
	15.2. Practice (laboratory, auditory), seminars, team work		15 hours
16. Other forms of activities	16.1. Project tasks		/ hours
	16.2. Individual tasks		45 hours
	16.3. Home learning		60 hours
17. Assignments and grading	17.1. Seminar work / project	up to 10 points	
	17.2. Active participation in classes	up to 10 points	
	17.3. Final exam	up to 80 points	
18. Evaluation criteria (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.	**Conditions for signature (verification of attendance of classes) and final exam**		Fulfilment of activities from 15.1 and 15.2.		
20.	**Language in which lectures are held**		Macedonian		
21.	**Methods of monitoring the quality of teaching**		Internal evaluations and surveys		
22.	**Literature**				
	22.1.	**Obligatory literature**			
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Георгиевски Ж.	Анатомија и технички Својства на дрвото (I и II дел)	УКИМ-ШФС, Скопје	1997
	22.2.	**Reccomended/ Additional literature**			
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Карахасановиќ А.	Наука о дрвету		
		2.	Šoškić B.	Svojstva drveta		
		3.	Енчев Е.	Дървесинознание		
		4.	Schoch W., Heller I., Schweingruber F. H., Kienast F.	Wood anatomy of Central European species	Online version: www.woodanatomy.ch	2004

1. Title of course	Dendrometry			
2. Code	ШФ121			
3. Study program	Forestry			
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje			
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate			
6. Semester: 4 (summer semester)	**7. Number of ECTS:** 6			
8. Lecturer: Prof. Dr. Pande Trajkov				
9. Preconditions for enrollment of the subject	Attended: Phytocenology, Dendrology, Geodesy			
10. Course objectives (competences): The students will acquire the knowledge needed for the methods to determine the volume, the age, and the increment of single trees (cut down and standing) and entire stands.				
11. Course content: *Theoretical lectures*: a. Instruments which are used when measuring trees. Determine the volume of cut down stems and parts acquired from them. Stereometrical methods, Physical methods. b. Determine the volume of standing trees. Volume tables. c. Determine the volume of entire stands. Methods with: real model stems, abstract model stems. Methods with the full stand measurement and methods with simple plots. d. Determine the age of single trees (cut down and standing), stand age, and average age on entire forest complexes. e. Determine the increment of single trees and stands. *Practical lectures*: Determine the volume, age, and growth by volume of single trees (cut down and standing), and entire stands. *Field lectures*: Determine the volume, age, and volume increment of single trees (cut down and standing), and entire stands through real data and objects (measuring the parameters of trees in the forest).				
Learning methods Theoretical classes, assignments, preparation of seminar works, individual presentation (.ppt) and paper work, and via consultations.				
13. Total available time (duration of course)	180 hours			
14. Distribution of the available time	Contact classes: 6 (3+3) / 90			
15. Teaching activities	15.1. Lectures (theory)	30 + 15 hours (cabinet + field)		
	15.2.Practice (laboratory, auditory), seminars, team work	30 + 15 hours (cabinet + field)		
16. Other forms of activities	16.1.Project tasks			
	16.2.Individual tasks			
	16.3.Home learning	90hours		
17. Assignments and grading	17.1. Exams	up to 80 (2 x 40) points		
	17.2.Seminar work / project			
	17.3. Active participation in classes	up to 20 points		
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Conditions for signature: Attendance and participation in lectures, practice, and field work with a minimum of 10 points. Conditions for passing: Acquire signature, get at least 41 points from partial exams (two) or final exam.			

				Final exam isn't obligatory. It is meant for the students which didn't pass through partial exams, or for those who want to improve their grade acquired through partial exams.		
20.	**Language in which lectures are held**			Macedonian		
21.	**Methods of monitoring the quality of teaching**			-Internal and external evaluations and surveys. -Self-evaluation		
22.	**Literature**					
	22.1.	**Obligatory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Mihajlov Ilija	Dendrometrija	UKIM	**1966**
		2.				
	22.2.	**Reccomended/ Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Ana Pranjic	Izmjera suma	Sveuciliste - Zagreb	**1997**
		2.				

1. Title of course	Hunting		
2. Code	ШФ122		
3. Study program	Forestry		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 6 (summer semester)	**7. Number of ECTS:** 6		
8. Lecturer: Full Prof. Dr. Vladimir Maletic			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Acquiring knowledge about the ways and methods of protection, care and rational use of hunting and economically important game species in open and in enclosed spaces			
11. Course content Basic methods of game breeding; naturally growing game; Improving natural food potential of the game; Food and feeding of the game; Selective, sanitary and trophy hunting of wild animals; Acclimatization and re-acclimatization the game; Breeding of the game in enclosed spaces; Artificial breeding of wild game; Structure of the hunting area; Normal strength of the game; Technical management of the hunting areas; Hunting weapons and ballistics; Hunting trophies; Hunting kynology			
12. Learning methods Theoretical classes, assignments, laboratory and field exercises, field work and consultations.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	5 (3+2)/75		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		
	16.2. Individual tasks		40 hours
	16.3. Home learning		45 hours
17. Assignments and grading	17.1. Seminar work / project	up to 15 points	
	17.2. Active participation in classes	up to 5 points	
	17.3. Final exam	up to 80 points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Requirement for signature: Attendance and participation in all forms of teaching (lectures, laboratory exercises and field) with at least 3 points. Requirement for passing the final exam: Gained requirement for signature, passed theoretical part (two partial exams / final exam) and practice (colloquium) with at least 48 points. The final exam is not mandatory, i.e. it is predicted for students who have acquired only the signature in index / not passed through the three partial exams and		

			for students who want to improve the success achieved through continuous verification during the semester.			
20.	**Language in which lectures are held**		Macedonian			
21.	**Methods of monitoring the quality of teaching**		Internal evaluations and surveys			
22.	**Literature**					
	22.1.	**Obligatory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Трпков Б.	Ловство	УКИМ	1985
		2.				
	22.2.	**Reccomended/ Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	I. Gajić	Lovna privreda (Hunting management; in Serbian)	Poljoprivredni fakultet Beograd – Zemun	1994
		2.	Z. Mustapić	Lovstvo (Hunting; in Croatian)	Hrvatski lovački savez	2004
		3.	Z. Popovic, N. Djordjevic	Исхрана дивљачи (Game feeding; in Serbian)	Пољопривред-ни факултет, Београд – Земун	2009

1. Title of course	Silviculture		
2. Code	ШФ123		
3. Study program	Forestry		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 5 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Nikolcho Velkovski			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) To familiarize students with forests and natural processes in them, the influence of natural factors on the forest and the techniques of silviculture and regeneration of forest ecosystems.			
11. Course content Introduction, Forms and types of forest, Degradation forms of forest, Management of high-stem forests, Management of low-stem forests, Middle-stem form of management, Forest natural stand, Natural forest thinning, Classification of trees in the forest, Type of cuttings, Climate factors and forest, Forest and the light, Forest and air temperature, Forest and atmospheric residues, Forest and the wind, Forest and soil conditions, Forest and relief conditions, Biotic factors and forest, Other features of forest, Life and growth of trees in the forest, Silvicultural measures in the forest, Protection of young plantation, Filling of non-regenerated parts of forest, Cuttings as silvicultural measure, Cuttings for lighting of offspring, Cuttings for cleaning of offspring, Thinnings, Trimming the branches as silvicultural measure, Silvicultural measures of vegetative forest, Other tending measures in the forest, Regeneration measures in the forest, Clear cut, Shelterwood cut, Selective cut, Combined methods of natural regeneration, Special methods for natural regeneration, High-stem forest with reserve trees, , Ghaers system grup-selective cut, Wagner's edge cut, Sistem Dauerwald, Eberhard's edge cut, Групно стопанисување Femeschlaggrup management Combined Bavarian system of natural regeneration, Free silvicultural technique, Boneman's combined method, Regenerative logging in pure high-stem forest, Regenerative logging in mixed forests, Regenerative logging in coppice plantations, Measures that help the natural regeneration of forests.			
12. Learning methods Theoretical classes, assignments, preparation of seminar works, individual presentation (.ppt) and paper work, and via consultations.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	5 (3+2) / 75		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		40 hours
	16.2. Individual tasks		25 hours
	16.3. Home learning		20 hours
17. Assignments and grading	17.1. Seminar work / project	up to 20 points	
	17.2. Active participation in classes	up to 20 points	
	17.3. Final exam	up to 60 (2x30/60) points	
18. Evaluation criteria (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.	**Conditions for signature (verification of attendance of classes) and final exam**			Fulfillment of activities from 15.1 and 15.2.		
20.	**Language in which lectures are held**			Macedonian (optional English)		
21.	**Methods of monitoring the quality of teaching**			Internal evaluations and surveys		
22.	**Literature**					
	22.1.	**Compulsory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Димитар Баткоски	Одгледување на шумите	Универзитет Св. Кирил и Методиј-Скопје, Шумарски факултет-Скопје	**2006**
		2.	Ljubivoje Stojanović & Milun Krstić	Gajenje šuma I	Univerzitet u Beogradu Šumarski fakultet	**2008**
	22.2.	**Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Ljubivoje Stojanović & Milun Krstić	Gajenje šuma III	Univerzitet u Beogradu Šumarski fakultet	**2000**
		2.				

1. Title of course	Forest harvesting		
2. Code	ШФ124		
3. Study program	Forestry		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 3 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Full Prof. Dr. Ljupco Nestorovski			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) The program in this course have goal to introduce the students with techniques and technologies for wood harvesting. Treats different problems that arise during the process of forest harvesting in different phases (tree cut, wood transport in forest-skidding, loading and unloading, transport). Fulfilling the tasks of the course, the students should be ready for practical work in the forest in the harvesting process in order to produce assortments of best quality.			
11. Course content Course is divided into Theoretical, Practical and Field work. Theoretical topics: Introduction (goal and methods, characteristics of the work, obligations); Techniques for tree marking; Techniques of tree cutting and assortments production; Tree value estimation, Wood standards; Protection measures; Tree transport in the forest (animal, tractors, skidders, forwarders…); Wood depos; Loading and unloading assortments; Transport; Different technologies from wood harvesting; Technical normative; Ecological impact. Practical topics: During the course, an Annual plan for harvesting is made by every student, consisting of: Wood volume, dynamics, and necessary workers for different phase, necessary equipment and tools for different phase, costs of work. Field work: Practical work in forest harvesting field, including the students into the process of production Two one-day visits of harvesting fields, and one three-day stationary exercises.			
12. Learning methods Theoretical classes, assignments, preparation of seminar works, individual presentation (.ppt) and paper work, and via consultations.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	7 (4+3) / 105		
15. Teaching activities	15.1. Lectures (theory)		60 hours
	15.2. Practice (laboratory, auditory), seminars, team work		45 hours
16. Other forms of activities	16.1. Project tasks		40 hours
	16.2. Individual tasks		25 hours
	16.3. Home learning		20 hours
17. Assignments and grading	17.1. Seminar work / project	up to 10 points	
	17.2. Active participation in classes	up to 10 points	
	17.3. Final exam	up to 90 (2x20+20+30) or 90 points	
18. Evaluation criteria (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.	**Conditions for signature (verification of attendance of classes) and final exam**			Fulfilment of activities from 15.1 and 15.2. Elaborate from practical exercises		
20.	**Language in which lectures are held**			Macedonian (optional English)		
21.	**Methods of monitoring the quality of teaching**			Internal evaluations and surveys		
22.	**Literature**					
	22.1.	**Obligatory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	V. Popovic	Forest utilization I, II	Faulty of Forestry, Belgrade	**1986**
		2.	B. Kulusic	Forest utilization	Faculty of Forestry, Sarajevo	**1995**
	22.2.	**Reccomended/ Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Lj. Nestorovski	Authorized textbook		**2010**
		2.	Lj. Nestorovski	Practicum		**2011**

1. Title of course	Forest transport		
2. Code	ШФ125		
3. Study program	Forestry		
4. Organizer of the study program	UKIM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 6 (summer semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Zdravko Trajanov			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) The objectives of the course is to introduce the students with transportation in forestry. Introduction to structural elements of road planning, design, construction and maintenance of the forest roads and other forest communications.			
11. Course content Introduction, aim and task of this course; General forest roads; Key factors determining the constructive elements of the road; Components of the road; Designing forest roads; Building of forest roads; Maintenance of forest roads; Ecological approach to design and construction of forest roads. Making design (conceptual design of forest road) in order to introduce the students with the content and technique of making the same. Forest transport as a whole in forest management.			
12. Learning methods Teaching is conducted in the form of a lecture (introduction to the theory of the course) exercises (preparation of elaborate - preliminary project of forest road) terrain teaching - exercises (tracing the road)			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	6 (3+3)/90		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		45 hours
16. Other forms of activities	16.1. Project tasks		10 hours
	16.2. Individual tasks		25 hours
	16.3. Home learning		35 hours
17. Assignments and grading	17.1. Seminar work / project	80 points (2x40)	
	17.2. Active participation in classes	10 points	
	17.3. Final exam	10 points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2.		
20. Language in which lectures are held	Macedonian		
21. Methods of monitoring the quality of teaching	Internal evaluations and surveys		

22.	Literature					
		Compulsory literature				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
	22.1.	**1.**	Z. Trajanov	Forest transport - authorized textbook	Faculty of Forestry - Skopje	2011
		2.	R. Akimovski	Forest transport objects	Faculty of Forestry – Belgrade	1997
		Additional literature				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
	22.2.	**1.**	S. Hristov	Forest transport	Faculty of Forestry – Sofia	1985
		2.	S. Angelov	Forest communication and transport	Faculty of Forestry – Skopje	2001

1. Title of course	Amelioration of degraded forests and shrubberies		
2. Code	ШФ126		
3. Study program	Forestry		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 5 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Kole Vasilevski			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Introducing students to degraded forest ecosystems, as well as possibilities and methods for their amelioration and converting into forests of better quality and production.			
11. Course content Teaching material covers the following topics: Introduction, Subject and assignments of studying, Objectives of the amelioration, Definition of terms, State of degraded forests in Macedonia, Description of the stands, Methods of amelioration of degraded forests and shrubberies, Direct methods of amelioration, Indirect methods of amelioration, Combined methods of amelioration, Forms of degraded forests and shrubberies, Degraded forests, Shrubberies, Implementation of methods of amelioration in degraded forests and shrubberies, Reclamation of degraded forest soils, Species of trees for introduction in degraded forests and shrubberies, Results of introduction of some native and introduced species in Macedonia, Silvicultural and protection measures for introduced species, Stands care, Documentation in performing the amelioration of degraded forests and shrubberies, Literature.			
12. Learning methods Teaching is conducted in the form of lecture, lab exercises, consultations, training and field exercises.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	5 (3+2) / 105		
15. Teaching activities	15.1. Lectures (theory)	45 hours	
	15.2. Practice (laboratory, auditory), seminars, team work	30 hours	
16. Other forms of activities	16.1. Project tasks	/	
	16.2. Individual tasks	35 hours	
	16.3. Home learning	50 hours	
17. Assignments and grading	17.1. Seminar work / project	up to 20 points	
	17.2. Active participation in classes	up to 20 points	
	17.3. Final exam	up to 60 (2x30/60) points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2.		
20. Language in which lectures are held	Macedonian (optional English)		
21. Methods of monitoring the quality of teaching	Internal evaluations and surveys		

22.	Literature					
	22.1.	**Compulsory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Мирчевски, С., Василевски, К., Велковски, Н.,	Мелиорација на деградирани шуми и шикари	Универзитет “Св. Кирил и Методиј”-Скопје, Шумарски факултет-Скопје	2012
	22.2.	**Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.				
		2.				

1. Title of course	Forest management			
2. Code	ШФ127			
3. Study program	Forestry			
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje			
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate			
6. Semester:8 (summer semester)	**7. Number of ECTS:**6			
8. Lecturer: Prof. Dr. Pande Trajkov				
9. Preconditions for enrollment of the subject	Attended: Dendrometry, Phytocenology, Silvyculture, Forest cultures, Hunting			
10. Course objectives (competences): The students will acquire the knowledge needed about the principles and elements of forest management, structure and content of the forest management plan and the methods for their preparation.				
11. Course content: *Theoretical lectures*: a. Forest, forest characteristics, types of forest. b. Elements of forest management. Site index and factors of growth. Forest stands and and types of stands. c. Structure of forest stands. d. Basic principles in forest management (maturity, rotation). e. Sustainable management of forests. Normal forest. f. Yield and types of yields. g. Basic systems for forest management. Methods for yield determining. Goals of management. Plans for achieving defined goals. *Practical lectures*: Forest management Plans. Legal basis. Structure and content of Forest management plans. Preparation of a forest management plan – simulated data. *Field lectures*: Preparation of a forest management plan (for a real object) by which all phases will be included.				
Learning methods: auditory and audio-visual Theoretical classes, demonstrative, collaboration, learning through lectures, learning through work.				
13. Total available time (duration of course)	180 hours			
14. Distribution of the available time	Contact classes: 6 (3+3) / 90			
15. Teaching activities	15.1. Lectures (theory)		30 + 15 hours (cabinet + field)	
	15.2.Practice (laboratory, auditory), seminars, team work		30 + 15 hours (cabinet + field)	
16. Other forms of activities	16.1.Project tasks			
	16.2.Individual tasks		30 hours	
	16.3.Home learning		60hours	
17. Assignments and grading	17.1. Exams	up to 60 (3 x 20) points		
	17.2.Seminar work / project	up to 20 points		
	17.3. Active participation in classes	up to 20 points		
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Conditions for signature: Attendance and participation in lectures, practice, and field work with a minimum of 10 points. Conditions for passing: Acquire a signature, get at least 31 points from partial exams (three) or final exam. Created seminar work (elaborate) minimum of 10 points.			

20.	**Language in which lectures are held**			Macedonian		
21.	**Methods of monitoring the quality of teaching**			-Internal and external evaluations and surveys. -Self-evaluation		
22.	**Literature**					
	22.1.	**Obligatory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	PandeTrajkov	Forest management	Internal script	
		2.				
	22.2.	**Reccomended/ Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Ilija Mihajlov	Arrangement of forests	UKIM	**1963**
		2.	Milan Medarevik	Planned running of forests	Forestry faculty of Belgrade	**2006**
		3.	----	Expert technical documentation	-----	**-----**

1. Title of course	Urban dendrology			
2. Code	ШФ128			
3. Study program	Landscape design			
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje			
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate			
6. Semester: 4 (summer semester)	**7. Number of ECTS:** 6			
8. Lecturer: Full Prof. Dr. Jane Acevski (Asst. Prof. Dr. Bojan Simovski, appointed since 2015/2016)				
9. Preconditions for enrollment of the subject	none			
10. Course objectives (competences) Urban dendrology covers important horticultural and ornamental trees, shrubs and vines of indigenous and exotic dendroflora, with special emphasis on varieties and forms used in urban spaces and their adaptive ability (ecology and pollution resilience). Gained knowledge is applied in biotechnical disciplines.				
11. Course content Ornamental native and exotic species and varieties of Gymnosperms / Coniferous plants (Gymnospermae); Ornamental native and exotic species and varieties of Angiosperms / Flowering plants (Angiospermae).				
12. Learning methods Theoretical classes, field lectures, visit of nurseries, arboreta, green houses and alpine houses, public (community) and private green spaces; Preparation of field reports, individual presentation (.ppt) and paper work, and via consultations.				
13. Total available time (duration of course)	160 hours			
14. Distribution of the available time	5 (3+2) / 75			
15. Teaching activities	15.1. Lectures (theory)			45 hours
	15.2. Practice (laboratory, auditory), seminars, team work			30 hours
16. Other forms of activities	16.1. Project tasks			40 hours
	16.2. Individual tasks			25 hours
	16.3. Home learning			20 hours
17. Assignments and grading	17.1. Seminar work / project	up to 20 points		
	17.2. Active participation in classes	up to 20 points		
	17.3. Final exam	up to 60 (2x30/60) points		
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfilment of activities from 15.1 and 15.2.			
20. Language in which lectures are held	Macedonian (optional English)			
21. Methods of monitoring the quality of teaching	Internal evaluations and surveys			
22. Literature				
22.1. Obligatory literature				

	No.	Author/s	Title	Publisher	Year
	1.	Џеков С.	Дендрологија (одбрани поглавја)	УКИМ-ШФС, Скопје	1988
	2.	Vukićević E.	Dekorativna dendrologija	Univerzitet u Beogradu, Beograd	1982
22.2.	**Reccomended/ Additional literature**				
	No.	**Author/s**	**Title**	**Publisher**	**Year**
	1.	Acevski J., Simovski B.	E-materials of Urban dendrology	UKiM FoF (auth. e-lect.)	2012
	2.	Royal Horticultural Society	Encyclopedia of Gardening	Dorling Kindersley Ltd., London	2002

1. Title of course	Basics of urbanism		
2. Code	ШФ129		
3. Study program	Landscape design		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 4 (summer semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Divna Pesnic			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Introducing students to the basic elements of the urban environment and the general processes of urbanization aspects, factors and regularities of development of the city-structure of city spaces and activities, as well as basic characteristics of urban planning and urban design.			
11. Course content Theoretical classes: Theoretical background. Definition, research and structuring of urbanization, basic urban structures, natural structures in the city, socio-cultural structures and processes, physical structures urban functions, interconnection and conditionality, as well as the basic design and planning tools, techniques and procedures. Practical classes, other forms of teaching studio identification and analysis of urban structures (elements and mutual relations) and factors, development of individual urban structures and elements, as well as identifying the most basic relevant tools and techniques of planning, designing and implementation of adequate solutions to promote urban structures and individual structural elements of the city.			
12. Learning methods Teaching is conducted in the form of lectures, exercises, field exercises, field work, using urban plans, statistical data.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	4 (2+2) / 60		
15. Teaching activities	15.1. Lectures (theory)		30 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		50 hours
	16.2. Individual tasks		/
	16.3. Home learning		50 hours
17. Assignments and grading	17.1. Seminar work / project	up to 30 points	
	17.2. Active participation in classes	up to 10 points	
	17.3. Final exam	up to 60 points (3 x 20)	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Prerequisites for signature: Attendance and participation in all forms of performing instruction (lectures, exercises).Requirement for passing: Obtained signature, theoretical part (two colloquium / final exam) passed, obtained at least 51 points. The final exam is not mandatory, i.e. it is for students who have only		

			obtained signature / or not passed through continuous examination and students who want to improve the rating achieved through continuous knowledge verification during the semester.		
20. Language in which lectures are held			Macedonian (optional English)		
21. Methods of monitoring the quality of teaching			Internal evaluations and surveys		
22.	**Literature**				
	22.1.	**Obligatory literature**			
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.				
		2.				
	22.2.	**Reccomended/ Additional literature**			
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Мацура Владимир	Град и градски предео	Универзитет - Београд	1989
		2.	Mumford Lewis	Grad u istoriji	BOOK MARSO	2001
		3.	Зите Камило	Уметничко обликовање града	Београд	2004

1. Title of course	History of park architecture		
2. Code	ШФ130		
3. Study program	Landscape Design		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 5 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Full Prof. Dr. Jasminka Rizovska Atanasovska			
9. Preconditions for enrollment of the subject	None		
10. Course objectives (competences) To introduce the students with the beginning and development of the park architecture in long period of time through history and the influence that it had on the up to date processes of park design through the years till nowadays.			
11. Course content Park architecture through the history. Gardens and parks in the ancient Egypt, Assyria, Babylon, Greece, Rome Empire. Phenomenon of the Islamic influence from North Africa considering their park and garden design in South Europe. Park architecture in the middle ages. renaissance and baroque parks and gardens in Italy, Spain, France, Austria, Germany, G. Britain. Landscape parks in G. Britain, France, Germany. Characteristics of the landscape parks and gardens in the XVIII and XIX Century. Park architecture in Russia. Up to date parks in Europe.			
12. Learning methods Theoretical classes, assignments, preparation of seminar works, individual presentation (.ppt) and paper work, and via consultations.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	5 (3+2) / 75		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		40 hours
	16.2. Individual tasks		25 hours
	16.3. Home learning		20 hours
17. Assignments and grading	17.1. Seminar work / project	up to 30 points	
	17.2. Active participation in classes	up to 10 points	
	17.3. Final exam	up to 60 (2x30/60) points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2.		
20. Language in which lectures are held	Macedonian		
21. Methods of monitoring the quality of teaching	Internal evaluations and surveys		

22.	Literature					
	22.1.	**Compulsory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Ризовска Атанасовска Ј.	Историја на парковска уметност	Интерна скрипта	2007
		2.				
	22.2.	**Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Кулелиев Ј.	Историја на градинско-парковото искуство	София	2007
		2.	Enge T.O., Schroer C.F.	Garden Architecture in Europe	Koln	1992

1. Title of course	Elements of landscape design		
2. Code	ШФ131		
3. Study program	Landscape Design		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 5 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Full Prof. Dr. Jasminka Rizovska Atanasovska			
9. Preconditions for enrollment of the subject	None		
10. Course objectives (competences) To introduce the students with the basic elements of landscape design such as vegetation, sculptures, water and architectural elements, their position, number, aesthetic appearance in parks and open green areas. Their importance in creating green areas.			
11. Course content Functions of the green areas. Composition. Elements and components of the parks and green areas. Styles in creating park composition. Geometric, landscape and combined. Zones and sectors in the park territories. Classification of the architectural elements in the park composition. Decorative architectural elements. Water mirrors, fountains, colonnades, balustrades, obelisks, caryatides, rotundas, glorioles. Architectural elements for essential needs, decorative lightning, candelabras, drinking fountains. Informative elements. Architectural elements for embossed terrain, steps, terraces, decorative walls. Architectural elements connected with furniture and rest and relaxation in the parks, benches, tables, pergolas, pavilions. Architectural elements for sport activities in the parks.			
12. Learning methods Theoretical classes, assignments, preparation of seminar works, individual presentation (.ppt) and paper work, and via consultations.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	5 (3+2) / 75		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		40 hours
	16.2. Individual tasks		25 hours
	16.3. Home learning		20 hours
17. Assignments and grading	17.1. Seminar work / project	up to 30 points	
	17.2. Active participation in classes	up to 10 points	
	17.3. Final exam	up to 60 (2x30/60) points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2.		
20. Language in which lectures are held	Macedonian		
21. Methods of monitoring the quality of teaching	Internal evaluations and surveys		

22. Literature

22.1. Compulsory literature

No.	Author/s	Title	Publisher	Year
1.	Ризовска Атанасовска Ј.	Елементи на пејзажно дизајнирање	Интерна скрипта	2011
2.				

22.2. Additional literature

No.	Author/s	Title	Publisher	Year
1.	Фомина Л.	Основи на парковото искуство	Софиа	1988
2.	Booth N.K.	Basic elements of Landscape Architectural Design	Watson-Guptil Publications, USA	1989

1. Title of course	Floriculture			
2. Code	ШФ132			
3. Study program	Landscape Design			
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje			
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate			
6. Semester: 3 (winter semester)	**7. Number of ECTS:** 6			
8. Lecturer: Full Prof. Dr. Jasminka Rizovska Atanasovska				
9. Preconditions for enrollment of the subject	None			
10. Course objectives (competences) To introduce the students with the floral elements of landscape design, floral plants in park compositions. Students can learn how to recognize, reproduce and implement them when creating open green space.				
11. Course content The material is divides in two parts. Characteristics of the floral elements, the basic issues connected with them like need and tradition for growing flowers. Classification of the flowers. Flowers for open space and indoor flowers. Perennials, annual flower plants and bulbs. Flower production. Implementation of the flower plants in the parks and open green spaces.				
12. Learning methods Theoretical classes, assignments, preparation of seminar works, individual presentation (.ppt) and paper work, and via consultations.				
13. Total available time (duration of course)	160 hours			
14. Distribution of the available time	5 (3+2) / 75			
15. Teaching activities	15.1. Lectures (theory)			45 hours
	15.2. Practice (laboratory, auditory), seminars, team work			30 hours
16. Other forms of activities	16.1. Project tasks			40 hours
	16.2. Individual tasks			25 hours
	16.3. Home learning			20 hours
17. Assignments and grading	17.1. Seminar work / project	up to 30 points		
	17.2. Active participation in classes	up to 10 points		
	17.3. Final exam	up to 60 (2x30/60) points		
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2.			
20. Language in which lectures are held	Macedonian			
21. Methods of monitoring the quality of teaching	Internal evaluations and surveys			
22. Literature				
22.1. Compulsory literature				

	No.	Author/s	Title	Publisher	Year
	1.	Ризовска Атанасовска Ј.	Цветни култури	Интерна скрипта	2012
	2.				
22.2.	**Additional literature**				
	No.	**Author/s**	**Title**	**Publisher**	**Year**
	1.	Noel Prockter	Perennials	Salamander books limited London	1988
	2.				

1. Title of course	Production of decorative plants		
2. Code	ШФ133		
3. Study program	Landscape design		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 4 (summer semester)	**7. Number of ECTS:** 6		
8. Lecturer: Full Prof. Dr. Dana Dina Kolevska			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Students will gain knowledge about biological and technical-technological aspects of ornamental plants production. Gained knowledge will be applied in various biological and biological - technical disciplines.			
11. Course content The study material is divided into two parts: 1. Propagation of ornamental plants and 2. Ornamental plants production. 1. Propagation of ornamental plants: seed science of ornamental plants; Generative and vegetative propagation. 2. Ornamental plants production: Organization of nurseries; Production facilities; technologies of ornamental plants production; Agro-technical and agro meliorative operations in nurseries; Production of seedlings of trees and shrubs; Production of roses; Production of flowers and other ornamental plants.			
12. Learning methods Theoretical classes, assignments, preparation of elaborates, individual presentation (.ppt) and paper work, laboratory and field exercises in nurseries, field work and consultations.			
13. Total available time (duration of course)	150 hours		
14. Distribution of the available time	5 (3+2)/75		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		
	16.2. Individual tasks		40 hours
	16.3. Home learning		45 hours
17. Assignments and grading	17.1. Seminar work / project	up to 35 points	
	17.2. Active participation in classes	up to 5 points	
	17.3. Final exam	up to 60 points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Requirement for signature: Attendance and participation in all forms of teaching (lectures, laboratory exercises and field) won with at least 3 points. Requirement for passing the final exam: Gained requirement for signature, passed the theoretical part (two partial exams / final exam, minimum 36 points) and practice (colloquium at least 6 points), worked up an elaborate (minimum 6 points), i.e. a total of minimum 51 points.		

				The final exam is not mandatory, i.e. it is predicted for students who have acquired only the signature in index / not passed through the two partial exams and for students who want to improve the success achieved through continuous verification during the semester.		
20.	**Language in which lectures are held**			Macedonian		
21.	**Methods of monitoring the quality of teaching**			Internal evaluations and surveys		
22.	**Literature**					
	22.1.	**Obligatory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Kolevska D.D.	Seed science and production of ornamental plants (in Macedonian	Internal textbook	2001
		2.	Rizovska Atanasovska J.	Perrenial and annual plants (in Macedonian)	Internal textbook	2001
		3.				
	22.2.	**Reccomended/ Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Stilinovic S.	Production of forest and ornamental seedlings (in Serbian)	Универзитет у Београду	1987
		2.	Karasek K.	Greenhouses for flower and nursery production (in Serbian)	Партенон Београд	1999

1. Title of course	Design of parks and green areas		
2. Code	ШФ134		
3. Study program	Landscape Design		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 7 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Full Prof. Dr. Jasminka Rizovska Atanasovska			
9. Preconditions for enrollment of the subject	None		
10. Course objectives (competences) €To introduce the students with the issue of designing the green areas of various types, like parks, gardens open green spaces in the cities considering the complexity of the topic in the urban organized areas.			
11. Course content System of green areas in the city, their historic development, planning and classification. Types of green systems. Normative acts of the green areas. Natural elements in the landscape composition. Creation and arrangement of the parks and open green spaces. Landscaping in the park architecture. Plants as elements in landscape design. Various types of gardens (rose gardens, alpine gardens) in creating specific green spaces. Classification of the green areas. Objects and process of landscape designing.			
12. Learning methods Theoretical classes, assignments, preparation of seminar works, individual presentation (.ppt) and paper work, and via consultations.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	5 (3+2) / 75		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		40 hours
	16.2. Individual tasks		25 hours
	16.3. Home learning		20 hours
17. Assignments and grading	17.1. Seminar work / project	up to 30 points	
	17.2. Active participation in classes	up to 10 points	
	17.3. Final exam	up to 60 (2x30/60) points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2.		
20. Language in which lectures are held	Macedonian		
21. Methods of monitoring the quality of teaching	Internal evaluations and surveys		

22.	Literature					
	22.1.	**Compulsory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Ризовска Атанасовска Ј.	Дизајнирање паркови и зелени површини	Интерна скрипта	2012
		2.				
	22.2.	**Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	VujkovicLj.	Pejzaznaarhitektura-planiranje i projektovanje	Beograd	1995
		2.				

1. Title of course	Raising and care of green areas		
2. Code	ШФ 135		
3. Study program	Landscape design		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 8 (summer semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Nikolcho Velkovski			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Introducing students to the types of green areas, their functions, purpose, characteristics, development, as well as the techniques of their raising and care.			
11. Course content Introduction, Historical development, Definition and meaning, Green areas and bioecological factors affecting the environment, Degradation and damage of green areas, Pollution of the environment, Importance of the plants and green areas, Selection of trees and shrubs for raising the green areas, Functioning of green areas, Lifespan of ornamental plants, Aging of ornamental plants, Categories of green areas, Green areas of general purpose, Green areas with limited purpose, Green areas with special purpose, Systems of green areas, Transfer of the project plan into the field, Value of ornamental plants and cost for raising and care, Machinery and tools for raising and care of green areas, Selection and protection of existing plants, Protection of plants in raising of ground level, Protection of the plants in lowering of the ground level , Planting of trees, Planting of shrubs, Regulations on the number of trees and shrubs for planting in the green areas, Replanting of trees, Measures for care of green areas, Watering, Spraying, Soil cultivation, Care of tree crown, Fertilization, Protection, Raising and care of hedges, Rosary and rockeries, Care of different types of green areas, Concept and meaning of lawns, Definition and classification, Function of lawns, Classification and purpose of lawns, Types and characteristics of grasses, Selection of grasses and grass mixtures, Storage and quality of grass seeds, Norms for sowing grass seeds, Technique for raising of lawns, Preparation of the terrain and soil for lawn establishment, Establishing lawn, Measures for care of lawns, Fertilization, Irrigation, Weeding, Mowing, Aeration Cleaning, Ripple and rolling of grasslands, Protective measures, Restoring neglected lawn (reconstruction) program, Annual program for care.			
12. Learning methods Theoretical classes, assignments, preparation of seminar works, individual presentation (.ppt) and paper work, and via consultations.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	5 (3+2) / 75		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		40 hours
	16.2. Individual tasks		25 hours
	16.3. Home learning		20 hours
17. Assignments and grading	17.1. Seminar work / project	up to 20 points	
	17.2. Active participation in classes	up to 20 points	
	17.3. Final exam	up to 60 (2x30/60) points	
18. Evaluation criteria (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.	**Conditions for signature (verification of attendance of classes) and final exam**		Fulfillment of activities from 15.1 and 15.2.		
20.	**Language in which lectures are held**		Macedonian		
21.	**Methods of monitoring the quality of teaching**		Internal evaluations and surveys		
22.	**Literature**				
	22.1.	**Compulsory literature**			
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Николчо Велковски	Подигање и нега на зелени површини (скрипта)		**2010**
		2.				
	22.2.	Additional literature				
		No.	Author/s	Title	Publisher	**Year**
		1.	Небојша Антанасијевиќ	Подизање и неговање зелених површина	Универзитет у во Белград, Шумарски факултет	**2007**
		2.	Димитар Баткоски	Одгледување и одржување на зелени површини (скрипта)	Интерни материјали	**2002**

1. Title of course	Park infrastructure objects		
2. Code	ШФ136		
3. Study program	Landscape design		
4. Organizer of the study program	UKIM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 7 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Zdravko Trajanov			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Introduction for parks infrastructure objects. Planning, design, construction and maintenance of parks infrastructure objects. Environmental and legal approach to building infrastructure construction.			
11. Course content Planning, design, construction and maintenance of infrastructure objects. Stages design (feasibility study, preliminary design, detailed design, construction project). Research and analysis in the design process through the introduction of construction materials, construction structures and buildings. Drawing up plans with graphic attachments. Techniques for making graphic attachments (overview map, situational plan, longitudinal profile, hampered profiles sections of buildings, profile volumes). Survey work and cost estimate. Manufacture technical documentation. Aesthetic and urban approach to designing parks infrastructure elements. Nature conservation and environmental approach to planning, building and maintenance of infrastructure facilities parks. Legislation related wit planning, designing, building and maintaining the parks infrastructure objects.			
12. Learning methods Teaching is conducted in the form of a lecture (introduction to the theory of the course) exercise (technique of design and construction of a project for infrastructure object) terrain teaching - exercises (visit the building site under construction of infrastructure object)			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	5 (3+2)/75		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		/
	16.2. Individual tasks		30 hours
	16.3. Home learning		55 hours
17. Assignments and grading	17.1. Seminar work / project	80 points (2x40)	
	17.2. Active participation in classes	10 points	
	17.3. Final exam	10 points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2.		
20. Language in which lectures are held	Macedonian		
21. Methods of monitoring the quality of teaching	Internal evaluations and surveys		

22.	Literature					
		Compulsory literature				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
	22.1.	**1.**	Z. Trajanov	Park infrastructure objects - authorized textbook	Faculty of Forestry – Skopje	2012
		2.	T. Walker	Site design and construction detailing, John Wiley & Sons	New York	1992
		Additional literature				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
	22.2.	**1.**	T. Harlow, F. K. Landphair	Landscape architecture construction, Elsevier	New York	1987
		2.	Lj. Vujkivic, M. Negak, D. Vujicic	Technique landscape designing	Faculty of Forestry - Belgrade	2003

1. Title of course	Garden design		
2. Code	ШФ137		
3. Study program	Landscape design		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 6 (summer semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Vlatko Andonovski			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Introducing students to the ways of designing the small gardens including elements corresponding to the purpose.			
11. Course content Housing and need to designing the gardens. Factors affecting the arrangement of gardens climate, tradition, location, plot size, shape, architecture of the building (the house). Spatial organization of the garden front, side and rear. functional structure of a garden terrace, a zone of peaceful rest-patio area of recreation, space for hobbies, accents. Elements of the physical structure of the gardens, vegetation, gardens and architecture elements, fences, pools, gates, paved areas. Types of gardens in terms of the area, style building of the house. Theme gardens, water, spicy, stone garden. House atrium, balconies and terraces. Roof gardens. Traditional gardens.			
12. Learning methods Teaching is conducted in the form of lectures, exercises, field exercises, field work, using urban plans, statistical data.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	4 (2+2) / 60		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		45 hours
	16.2. Individual tasks		/
	16.3. Home learning		40 hours
17. Assignments and grading	17.1. Seminar work / project	up to 30 points	
	17.2. Active participation in classes	up to 10 points	
	17.3. Final exam	up to 60 points (3 x 20)	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Prerequisites for signature: Attendance and participation in all forms of performing instruction (lectures, exercises). Requirement for passing: Obtained signature, passed the theoretical part (two		

			colloquium / final exam) obtains at least 51 points. The final exam is not mandatory, i.e. it is for students who have only obtained signature / or not passed through continuous examination and students who want to improve the rating achieved through continuous knowledge verification during the semester.		
20.	**Language in which lectures are held**		Macedonian (optional English)		
21.	**Methods of monitoring the quality of teaching**		Internal evaluations and surveys		
22.	**Literature**				
	22.1.	**Obligatory literature**			
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Јасминка Ризовска Атанасовска	Дизајнирање на градини	Интерна скрипта	2012
		2.				
	22.2.	**Reccomended/ Additional literature**			
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Plucknet J.	The Small Garden	Abbeydale Press	2002
		2.	Brookes J.	Dizajn vrta	London	2002
		3.	Alexander R.	A Handbook for Garden Designers	London	1994

1. Title of course	Landscape aesthetics		
2. Code	ШФ137		
3. Study program	Landscape design		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 6 (summer semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Vlatko Andonovski			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) To provide basic knowledge of students for landscape design, including analysis design, studying the earth forms and planning their amendment, and selecting plant material and its proper use in order to create specific landscapes.			
11. Course content Landscape design principles: physical (morphological) characteristics of a plant form texture, color, unity of design, simplicity and repetition, diversity, emphasis, balance, line, sequence, rhythm. Creating focal points. Applying the principles in designing. Plants and architecture. Functional use of the landscape design: balancing structural and plant forms, texture and architecture, plants selection and their use. Circulating elements. External room. Walls and ceilings. Framing of view. Process of landscape design: defining zones, landscape combining with structural architectural elements, landscape plan. Computers in landscape design.			
12. Learning methods Teaching is conducted in the form of Lectures, exercises, field exercises, field work, visit of different categories of green spaces, writing of essays / assignments and consultations.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	4 (2+2) / 60		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		45 hours
	16.2. Individual tasks		/
	16.3. Home learning		40 hours
17. Assignments and grading	17.1. Seminar work / project	up to 30 points	
	17.2. Active participation in classes	up to 10 points	
	17.3. Final exam	up to 60 points (3 x 20)	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Prerequisites for signature: Attendance and participation in all forms of performing instruction (lectures, exercises). Requirement for passing: Obtained signature, passed the theoretical part (two colloquium / final exam) obtains at least 51 points. The final exam is not mandatory, i.e. it is for students who have obtained only signature / or not passed through continuous examination and students who want to		

				improve the rating achieved through continuous knowledge verification during the semester.		
20.	**Language in which lectures are held**			Macedonian (optional English)		
21.	**Methods of monitoring the quality of teaching**			Internal evaluations and surveys		
22.	**Literature**					
	22.1.	**Obligatory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Влатко Андоновски	Пејзаж и дизајн на зелените површини	Интерна скрипта	2005
		2.				
	22.2.	**Reccomended/ Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Grant W. Reid	From Concept to Form in a Landscape Design	John Wiley and Sons, Inc, USA	1993
		2.	Motloch J. L.	Introduction to Landscape Design	John Wiley and Sons, Inc, USA	2001
		3.	Hannebaum L. G.	Landscape Design	New Jersey, USA	2002

1. Title of course	Forest invertebrates		
2. Code	ШФ141		
3. Study program	Eco-engineering and eco-management		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 4 (summer semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Sterja Načeski			
9. Preconditions for enrollment of the subject	None		
10. Course objectives (competences) Introduction to morphology, anatomy, biology of protozoa, flat worms, annelies, nematodes, mollusks, snails, crustaceans, spiders			
11. Course content Theory classes: In the course are taught morphology, anatomy, reproduction and development, biology of Type Protozoa, Type Plathelminthes, Type Nemathelmintes, Class Nematoda; Type Mollusca, Class Gastropoda; Type Annelida,, Type Arthropoda, Suptype Branchiata , Class Crustacea; Subtype Chelicerata, Class Arachnida (Order Scorpiones, Aranea, Acarina,), Subtype Tracheata, Class Myriapoda, Class Diplopoda, Class Chilopoda, Class Symphyla and Class Insecta (Hexapoda) - insects, Subclass Apterygota (Order Protura,Diplura, Collembola и Thysanura); Subclass Pterygota, Section Exopterygota, Odonata, Ephemeroptera, Blattodea, Isoptera, Mantodea, Dermaptera, Orthoptera, Phasmida, Homoptera, Heteroptera,. Endopterygota, Rhaphidioptera, Neuroptera, Coleoptera, Lepidoptera, Hymenoptera, Dipteraa, then to separate families, as well as insects. While special attention is paid to their physiology and ecology. For certain types of insects developed their biology, meaning they have for forest ecosystems. Practical classes: The practical part of this subject includes work on morphological and anatomical images of the structure of protozoa, flat worms, tube worms, nematodes, mollusks, snails, crustaceans, spiders, and insects, reproduction and development and their ecology.			
12. Learning methods Teaching is conducted in the form of lectures, laboratory and field exercises, field work, consultations, exercises used sketches, presentations, live and stuffed material invertebrates, and different types of insects and other invertebrates.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	6 (3+3) 90		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		45 hours
16. Other forms of activities	16.1. Project tasks		10 hours
	16.2. Individual tasks		25 hours
	16.3. Home learning		35 hours
17. Assignments and grading	17.1. Seminar work / project	up to 20 points	
	17.2. Active participation in classes	up to 20 points	
	17.3. Final exam	up to 60 (2x30/60) points	
18. Evaluation criteria (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.	**Conditions for signature (verification of attendance of classes) and final exam**		Fulfillment of activities from 15.1 and 15.2.			
20.	**Language in which lectures are held**		Macedonian			
21.	**Methods of monitoring the quality of teaching**		Internal evaluations and surveys			
22.	**Literature**					
	22.1.	**Compulsory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Moloje Kruniić	Zoology of invertebrates Part II	Naučna Knjiga, Beograde	**1989**
		2.	Jonche Shapkarev	Zology of invertebrates		**1991**
		3.	Ljupka Hadzi-Ristova	Forest entomology (1 and 2 part)	UKIM-Skopje	**1995**
	22.2.	**Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Ljubodrag Mihajlović	Forest entomology	FF-Belgrade	**2008**

1. Title of course	Forest mycology and lichenology		
2. Code	ШФ142		
3. Study program	Eco-engineering and eco-management		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	undergraduate		
6. Semester: 3 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Assoc. Prof. Dr. Irena Papazova-Anakieva			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) This course provides introduction to the various groups of fungi and lichens, their morphology, biological activities and economic importance. When the student complete this class it should be able to: Discuss the importance of fungi in various ecological roles; demonstrate an understanding of how fungi impact human affairs; outline the higher taxonomy of the fungi and how the fungi relate to other organisms, discuss the characteristics of the major classes and orders within the fungal kingdom, identify the major families and certain species of mushrooms and other macro-fungi and lichens, and also plant diseases caused by fungi on forest trees.			
11. Course content Topics covered with this course include taxonomy, life history traits, ecology, physiology, and evolutionary biology of the major classes and orders of fungi (true fungi and other groups of organisms traditionally classified with the fungi) and lichens. Particular emphasis is placed on the impact of fungi on forest tree health (plant diseases caused by fungi). Laboratory exercises will emphasize the identification of these orders. Introduction to the Fungi; Diversity of fungi and fungus-like organisms; Relationship to other organisms; History of mycology; The fungal body and cells; Fungal physiology, nutrition, and growth; Fungal ecology: ways they make their living; Division of Mastigomycota, Zygomycota, Ascomycota, Basidiomycota, Deuteromycota; Fungi as symbionts: Mycorrhiza; Lichens; Fungi as food; Mushroom poisoning; Medicinal uses of fungi and lichens.			
12. Learning methods Theoretical classes, interactive laboratory and field exercises, guided observation of specimens of various fungi; Field research, preparation of field reports, and paper work, and via consultations.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	3+2		
15. Teaching activities	15.1. Lectures (theory)		60 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		10 hours /
	16.2. Individual tasks		30 hours
	16.3. Home learning		30 hours
17. Assignments and grading	17.1. Seminar work / project	up to 20 points	
	17.2. Active participation in classes	up to 20 points	
	17.3. Final exam	up to 60	
18. Evaluation criteria (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.	**Conditions for signature (verification of attendance of classes) and final exam**		Fulfillment of activities from 15.1 and 15.2.		
20.	**Language in which lectures are held**		Macedonian		
21.	**Methods of monitoring the quality of teaching**		Internal evaluations and surveys		
22.	**Literature**				
	Compulsory literature				
	No.	**Author/s**	**Title**	**Publisher**	**Year**
22.1.	**1.**	I. Papazova-Anakieva	Forest mycology and lichenology (internal textbook)	UKIM - FOF	2012
	2.				
	Additional literature				
	No.	**Author/s**	**Title**	**Publisher**	**Year**
22.2.	**1.**	Webster, J., Weber, R.	Introduction to fungi	Cambridge University Press. UK	2007
	2.	Lee, R. E	Phycology. 4th edition	USA, Cambridge University Press	2008
	3.	Ушчуплић, М	Свијет глјива	Академија наука и уметности на БиХерцеговине	2004

1. Title of course	Influence of the activities on the environment		
2. Code	ШФ143		
3. Study program	Eco-engineering and eco-management		
4. Organizer of the study program	UKIM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 7 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Zdravko Trajanov			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) The objectives of the course is to determine the impact of various human activities on environment. Legal and practical problem solving related to the impact of the actions of man, with particular reference to the influence of forest and park activities on the environment.			
11. Course content Introduction, aim and task of this course; Political, social, institutional and legislative framework In evaluating the influence of the activities on the environment. Developing designer activity, general overview of the type of activities, technological - technical description activities, description of the environment around the object, the impact of activities on the environment. Highlights needed to implement the process, determining volume of process assessment impact, measures to reduce the impact monitoring indicators process making, managing processes, process control, etc. Situation in Republic of Macedonia and procedures world-famous institutions in assessing the impact of activities on environmental protection.			
12. Learning methods Teaching is conducted in the form of a lecture (introduction to the theory of the course) exercises (preparation of program of the impact of the activities on the environment) terrain teaching - exercises (assessment of the influence of a particular object on the environment)			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	5 (3+2)/75		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		/
	16.2. Individual tasks		30 hours
	16.3. Home learning		55 hours
17. Assignments and grading	17.1. Seminar work / project	80 points (2x40)	
	17.2. Active participation in classes	10 points	
	17.3. Final exam	10 points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2.		
20. Language in which lectures are held	Macedonian		
21. Methods of monitoring the quality of teaching	Internal evaluations and surveys		

22.	Literature					
		Compulsory literature				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
	22.1.	**1.**	Z. Trajanov	Impact of activity environment- authorized textbook	Faculty of Forestry – Skopje	2012
		2.	М. Мулев	Environmental environment	Wordbook	1997
		Additional literature				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
	22.2.	**1.**	J. Dimitrievik	environment	Faculty of Forestry - Belgrade	1998
		2.	Z. Trajanov et al.	Studies assessment influence of activity on the environment	Faculty of Forestry – Skopje end other	

1. Title of course	Identification and production of mushrooms		
2. Code	ШФ151		
3. Study program	Forestry; Landscape design; Eco-engineering and eco-management		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 4,6 (summer semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Kiril Sotirovski			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Enabling students for determination of the most important genera and species of edible and poisonous fungi in the country; presenting their role in forest ecosystems as well as knowledge of practical aspects for production of commercially most exploited species.			
11. Course content Theoretical lectures: Through lectures the basic aspects of the kingdom of fungi are presented as well as terms of the science of mycology. General rules for collection and for identification of mushrooms are covered. Also, presented in-depth knowledge of the morphological and ecological characteristics of species and genera *Agaricus, Amanita, Boletus, Cantharellus, Coriolus, Ganoderma, Gyromytra, Lactarius, Langermania, Lepiota, Lycoperdon, Macrolepiota, Morchela, Phalus, Pleurotus, Russula, Suillus, Tricholoma, Tuber*. Poisonous mushrooms are presented also from toxicological aspects, while medicinal properties of so called medicinal mushroom species are learned. Practical classes: During practical laboratory microscopy classes are learned microscopic and macroscopic methods for determination of mushrooms, mastering the basics for use of keys for determination, as well as basic methodology for commercial production of lignicolous species of fungi. Field classes: Practical learning of various aspects of the ecology of edible and poisonous mushroom species, proper collection and preparation of species for determination.			
12. Learning methods Theoretical classes and practical classes with samples in the microscopy classroom.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	Number of contact classes in week and semester 3 (2+1) / 45		
15. Teaching activities	15.1. Lectures (theory)		30
	15.2. Practice (laboratory, auditory), seminars, team work		10 + 5 hours Classroom + field classes
16. Other forms of activities	16.1. Project tasks		10 hours
	16.2. Individual tasks		35 hours
	16.3. Home learning		70 hours
17. Assignments and grading	17.1. Partial tests	up to 60 points (3 x 20)	
	17.2. Seminar work / project	up to 20 points	
	17.3. Active participation in classes	up to 20 points	
18. Evaluation criteria (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.	**Conditions for signature (verification of attendance of classes) and final exam**		Condition for signature: Presence and activity in all forms of classes (lectures, practical, field), accomplished minimum 60% of point from the first partial exam – recognition of pathogens) Condition for passing exam: Verification signature, accomplished minimum 50% of the second and 50% of third partial exam, i.e. a total minimum of 51 point (%) from partial exams (three) or final exam.		
20.	**Language in which lectures are held**		Macedonian (optional English)		
21.	**Methods of monitoring the quality of teaching**		-questionnaire for students; -questionnaire for lecturers, -external evaluations -self evaluation		
22.	**Literature**				
	22.1.	**Compulsory literature**			
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Karadelev, M.	Fungi of Macedonia	Macedonian mycological society	2002
		2.	Sotirovski, K.	Identification and production of mushrooms	Internal textbook	2008
	22.2.	**Additional literature**			
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Focht, I.	Kljuc za gljive	Naprijed, Zagreb	**1996**
		2.	Koso, Sh.	Gajenje gljive bukovace	Nolit, Beograd	**1991**

1. Title of course	Poisonous, medicinal and edible plants		
2. Code	ШФ152		
3. Study program	Forestry; Landscape design; Eco-engineering and eco-management		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 3,5 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Full Prof. Dr. Jane Acevski			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Introduction to poisonous, medicinal and edible woody plants in the country, its importance for use during visit or work in forests and greening of public and private spaces; Nutritional and pharmacological usage. Gained knowledge is applied in biotechnical disciplines.			
11. Course content Introduction of toxic and edible woody plants; Poisonous, medicinal and edible plant anatomical parts and organs; Special emphasis on Macedonian poisonous, medicinal and edible dendroflora; Identification of poisonous, medicinal and edible woody plants in Macedonia; Importance and possibility of utilization.			
12. Learning methods Lectures, laboratory and field exercises, field work, visiting forests, public and private green spaces, facilities for collection and processing of berries (forest fruits); Preparation of field reports, individual presentation (.ppt) and preparation of paper work, and via consultations.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	5 (3+2) / 75		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		40 hours
	16.2. Individual tasks		25 hours
	16.3. Home learning		20 hours
17. Assignments and grading	17.1. Seminar work / project	up to 20 points	
	17.2. Active participation in classes	up to 20 points	
	17.3. Final exam	up to 60 (2x30/60) points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2.		
20. Language in which lectures are held	Macedonian		
21. Methods of monitoring the quality of teaching	Internal evaluations and surveys		
22. Literature			

22.1.	**Compulsory literature**				
	No.	**Author/s**	**Title**	**Publisher**	**Year**
	1.	Grlić Lj.	99 jestivih i otrovnih boba	Prosvjeta, Zagreb	1984
	2.	Џеков С.	Дендрологија (одбрани поглавја)	УКИМ-ШФС, Скопје	1988
22.2.	**Additional literature**				
	No.	**Author/s**	**Title**	**Publisher**	**Year**
	1.	Балтоски Б.	Фитофармација	Наша книга	1981
	2.	Станковиќ А.	Фитофармација, 1 и 2		
	3.	Kothe W. H.	1000 Kräuter	Naumann & Göbel Verlagsgesellschaft mbH, Köln	2006
	4.	Šilić Č.	Atlas drveća i grmlja	Zavod za udžbenike i nastavna sredstva, Sarajevo / Beograd	1983

1. Title of course	Protection of wood		
2. Code	ШФ156		
3. Study program	Forestry / Landscape Design/ Ecoengineering and Ecomanagement		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	undergraduate		
6. Semester: I / 2	**7. Number of ECTS:** 6		
8. Lecturer: Full Prof. Dr Sterja Naceski**,** Assoc. Prof. Dr. Irena Papazova-Anakieva			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Biological characteristics of xylophagous insects, types of damage, methods and measures of wood protection from xylophagous insects. Introduction to basic principles of the wood rotting process; main causes of wood rotting (fungi and bacteria), isolation and identification methods and wood protection measures.			
11. Course content Introduction. Xylophagous insects; Key features of xylophagous insects. Physiology of nutrition; Breeding and development cycle of xylophagous insects, Ecology of xylophagous insects, Distribution, Protection measures from xylophagous insects, preventive and repressive; Bionomy, damage and eradication measures of certain types of xylophagous insects; Isoptera, Coleoptera (Fam.: Bostrychidae, Lyctidae, Lymexilidae, Anobidae, Cerambycidae, Curculionidae); Hymenoptera (Fam. Siricidae, Formicidae, Apidae); Lepidoptera (Fam. Cossidae and Sesiidae). Wood structure. Alterations in the wood (abiotic agents, bacteria, fungi). Effects of fungi on the membrane and contents of the cells. Definition of wood rot. Types of rot. Stages of decay. Technological implications of the rot processes on wood (mechanical resistance, wood density, wood shrinking, calorific value). Wood decay diagnostic methods (classical and modern methods). Factors of wood resistance to the rot. Classification of resistance of various types of wood. Wood staining fungi (fungi, diagnosis, protection, other changes of color, abiotic alterations). Methods for protecting of wood from decaying (processes with pressure, processes without pressure, other processes). Wood protecting pesticides. Wood-decaying fungi (morphology, ecology, biology, rot type, protective measures).			
12. Learning methods Theoretical classes, assignments, preparation of seminar works, individual presentation (.ppt) and paper work, and via consultations.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	4 (2+2)/ 60		
15. Teaching activities	15.1. Lectures (theory)		30 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		20 hours
	16.2. Individual tasks		30 hours
	16.3. Home learning		50 hours
17. Assignments and grading	17.1. Seminar work / project	up to 10 points	
	17.2. Active participation in classes	up to 10 points	
	17.3. Final exam	up to 80 (2x40) points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2.
20. Language in which lectures are held	Macedonian
21. Methods of monitoring the quality of teaching	Internal evaluations and surveys

22. Literature

22.1. Compulsory literature

No.	Author/s	Title	Publisher	Year
1.	Vasik, K	Protection of wood I	UB	1971
2.	Naceski, S	Protection of wood	UKIM FOF	**2005**
3.	Krstik, M	Protection of wood II	UB	1962

22.2. Additional literature

No.	Author/s	Title	Publisher	Year
1.	Hadzi-Ristova, Lj	Forest entomology	UKIM FOF	1995

1. Title of course	Fundamentals of microbiology		
2. Code	ШФ159		
3. Study program	Forestry / Landscape Design		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	undergraduate		
6. Semester: I / 2	**7. Number of ECTS:** 6		
8. Lecturer: Assoc. Prof. Dr. Irena Papazova-Anakieva			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Students will develop knowledge of basic concepts in several important areas of microbiology, primarily those that are most related to the aspects of environment and forestry.			
11. Course content The course covers topics in several completely independent chapters: algae, lichens, archaea, basic bacteriology, basic virology, mycorrhiza, endosymbiotic theory, extremophiles, classification of the living organisms, modern methods of bioengineering. Practical classes: Laboratory exercises, microscopy, microbiological methods			
12. Learning methods Theoretical classes, assignments, preparation of seminar works, individual presentation (.ppt) and paper work, and via consultations.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	3 (2+1)/ 45		
15. Teaching activities	15.1. Lectures (theory)		30 hours
	15.2. Practice (laboratory, auditory), seminars, team work		15 hours
16. Other forms of activities	16.1. Project tasks		25 hours
	16.2. Individual tasks		35 hours
	16.3. Home learning		55 hours
17. Assignments and grading	17.1. Seminar work / project	/	
	17.2. Active participation in classes	up to 10 points	
	17.3. Final exam	up to 90 (2x45) points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2.		
20. Language in which lectures are held	Macedonian		
21. Methods of monitoring the quality of teaching	Internal evaluations and surveys		

22.	Literature					
	22.1.	**Compulsory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	I. Papazova-Anakieva K.Sotirovski	Fundamentals of microbiology (internal textbook)	UKIM - FOF	2008
		2.				
	22.2.	**Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Prescott, Harley, Klein	Microbiology, fifth edition	McGraw-Hill Higher Education	2002
		2.				

1. Title of course	Basics of genetics and tree improvement		
2. Code	ШФ161		
3. Study program	Forestry; Landscape design		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 7 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Vlatko Andonovski			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) To familiarize students with the basics of genetics as a branch of biology that studies processes of inheritance and variability of living creatures, and with the breeding of plants as reconstruction process (improvement) in the nature of existing and creating new cultural varieties of plants (trees and shrubs).			
11. Course content Teaching material is divided into two parts: Principles of genetics and cultivation of plants. Basics of genetics: General part (case study, significance, objectives, history, division and scientific methods); Genetic material and cell division; Basic rules of succession; Forms of variability and their classification; Genetic variability; Gene conservation; Breeding with selection. Breeding with mutations; Breeding with hybridization.			
12. Learning methods Theoretical classes, assignments, preparation of seminar works, individual presentation (.ppt) and paper work, and via consultations.			
13. Total available time (duration of course)	105 hours		
14. Distribution of the available time	3 (2+1) / 45		
15. Teaching activities	15.1. Lectures (theory)		30 hours
	15.2. Practice (laboratory, auditory), seminars, team work		15 hours
16. Other forms of activities	16.1. Project tasks		
	16.2. Individual tasks		32 hours
	16.3. Home learning		28 hours
17. Assignments and grading	17.1. Seminar work / project	up to 15 points	
	17.2. Active participation in classes	up to 5 points	
	17.3. Final exam	up to 80 points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Prerequisites for signature: Attendance and participation in all forms of performing instruction (lectures, laboratory and field exercises) with acquired at least 3 points. Requirement for passing: Obtained signature, theoretical part (two partial exams / final exam passed, obtained minimum 42 points) and		

			made essays (minimum 6 points) i.e. a total of at least 51 points obtaned. The final exam is not mandatory, ie it is for students who have acquired only with signature in the Index / or not passed through continuous checking and students who want to improve the rating achieved through continuous knowledge verification during the semester.		
20.	**Language in which lectures are held**		Macedonian (optional English)		
21.	**Methods of monitoring the quality of teaching**		Internal evaluations and surveys		
22.	**Literature**				
	22.1.	**Obligatory literature**			
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Андоноски А.	Генетика и облагородување на шумските дрвја	УКИМ, Скопје	1994
		2.				
	22.2.	**Reccomended/ Additional literature**			
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Туцовиќ А.	Генетика са оплемењивањем билјака	Универзитет у Београду	1985
		2.				

1. Title of course	Introduction to Forestry		
2. Code	ШФ 162		
3. Study program	Landscape design; Eco-engineering and eco-management		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 3,5,7 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Nikolcho Velkovski, Prof. Dr. Nikola Nikolov			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) The main objective of this course is to introduce students of study programs of Landscape design, and Ecoengineering and Ecomanagement to basic forest activities which are subject of study of the study program of Forestry.			
11. Course content Introduction, Definition of forest (Forest types according to FAO), Forest wealth (in the world, in Europe, in RM), Forest ecosystem, Forest plantations, Silviculture and Forest melioration, Forest protection, Use and transport, Inventory, Growth and yield, Forest management, Organization of Forestry in Macedonia, Practical work: Independent assignment, Analysis of forestry on regional and country level, etc.			
12. Learning methods Theoretical classes, assignments, preparation of seminar works, individual presentation (.ppt) and paper work, and via consultations.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	5 (3+2) / 75		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		40 hours
	16.2. Individual tasks		25 hours
	16.3. Home learning		20 hours
17. Assignments and grading	17.1. Seminar work / project	up to 20 points	
	17.2. Active participation in classes	up to 20 points	
	17.3. Final exam	up to 60 (2x30/60) points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2.		
20. Language in which lectures are held	Macedonian		
21. Methods of monitoring the quality of teaching	Internal evaluations and surveys		

22.	Literature					
	22.1.	**Compulsory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Венгер Карл	Шумарство (прирачник)	Академски печат	**2010**
		2.				
	22.2.	**Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	МЗШВ	Стратегија за одржлив развој на шумарството во РМ	Влада на РМ - МЗШВ	**2006**
		2.				

1. Title of course	Forest policy		
2. Code	ШФ 164		
3. Study program	Forestry; Eco-engineering and eco-management		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 4,6,8 (summer semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Makedonka Stojanovska			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) The course “Forest Policy” studies forest political structures and processes as well as policies and programmes in supra and international level as relevant for the R. of Macedonia. It therefore gives insight into forest policy aspects within the European Union as well as on global level.			
11. Course content Topics of the course are the following: politics and policy aspects with respect to criteria and indicators for sustainable forest management; political processes and instruments for the certification of forest products from sustainable forest management; the issue of a global forest convention and other policy means for enforcing sustainable forest management on the global level (forest principles, proposals for action, etc.); related conventions (convention on biological diversity and framework convention on climate change including implications of the Kyoto protocol); European forest strategy and strategy on biological and landscape diversity; Pan-European Ministerial Conferences on the Protection of Forests; national forest programmes, conventions ratified by R.Macedonia, legal framework related to forestry in Macedonia, forest management plans.			
12. Learning methods Theoretical classes, assignments, visit of relevant ministries for forestry and environment; preparation of seminar works, individual presentation (.ppt) and paper work, and via consultations..			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	5 (3+2) / 75		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		40 hours
	16.2. Individual tasks		25 hours
	16.3. Home learning		20 hours
17. Assignments and grading	17.1. Seminar work / project	up to 20 points	
	17.2. Active participation in classes	up to 20 points	
	17.3. Final exam	up to 60 (2x30/60) points	
18. Evaluation criteria (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. Conditions for signature (verification	Fulfillment of activities from 15.1 and 15.2.		

	of attendance of classes) and final exam					
20.	**Language in which lectures are held**			Macedonian (optional English)		
21.	**Methods of monitoring the quality of teaching**			Internal evaluations and surveys		
22.	**Literature**					
	22.1.	**Compulsory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	M.Moran,M. Rein, R.Goodin	Public policy	Oxford	2010
		2.	Max Krott	Forest policy	Springer	2005
	22.2.	**Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.				
		2.				

1. Title of course	Biomass and energy		
2. Code	ШФ166		
3. Study program	Forestry; Eco-engineering and eco-management		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 3 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Full Prof. Dr. Ljupco Nestorovski			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) The program in this course have goal to introduce the students with the possibilities, as well as the techniques and technologies for energy production from forest biomass, the types of energetic potential, energetic values of different tree species. Also, the students have an opportunity to learn about the different ways to convert wood to energy and different technologies for utilization the wood for energetic purposes.			
11. Course content Course is divided into Theoretical and Practical topics. Theoretical topics: Introduction (goal and methods, characteristics of the work, obligations); Methodologies for determination of energetic potential (theoretical, real); Systems for energy wood harvesting; Techniques for preparing the energetic wood; Technologies for biomass energy production; Legal obligations; Standards for energy wood; Ecological impact. Practical topics: wood density determination; Wood moisture content determination; Models of plants for wood combustion; Supply chain; Energy costs.			
12. Learning methods Theoretical classes, assignments, preparation of seminar works, individual presentation (.ppt) and paper work, and via consultations.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	4 (2+2) / 60		
15. Teaching activities	15.1. Lectures (theory)		30 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		0 hours
	16.2. Individual tasks		50 hours
	16.3. Home learning		50 hours
17. Assignments and grading	17.1. Seminar work / project	up to 10 points	
	17.2. Active participation in classes	up to 10 points	
	17.3. Final exam	up to 70 (2x30+10) or 90 points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfilment of activities from 15.1 and 15.2.		
20. Language in which lectures are held	Macedonian (optional English)		
21. Methods of monitoring the quality of	Internal evaluations and surveys		

	teaching					
22.	**Literature**					
	22.1.	**Obligatory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	S. Armenski	Renewable – sustainable energy sources	Student word	**2008**
		2.	S. Armenski	Energy from biomass	Alfa -94	**2009**
	22.2.	**Reccomended/ Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Lj. Nestorovski	Authorized textbook		**2015**
		2.				

1. Title of course	Urban greenery		
2. Code	ШФ167		
3. Study program	Forestry, Eco-engineering and Eco-management		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 2 (summer semester)	**7. Number of ECTS:** 6		
8. Lecturer: Full Prof. Dr. Jasminka Rizovska Atanasovska			
9. Preconditions for enrollment of the subject	None		
10. Course objectives (competences) To introduce the students with the issue of green areas, their meaning for the urban environment, their functions, way of creating and arrangement of the open green spaces and their organization too.			
11. Course content Historic development of the parks and gardens. Parks and gardens in the ancient civilizations. Parks and gardens in the Middle Ages. Parks and gardens in the renaissance and baroque period. Up to date parks and gardens. Green systems in the cities. Styles in creating gardens and parks. Park composition and its elements. Plants in various compositions as elements in the park composition, solitaires, massive, groups flower plants and lawns. Greening of the streets and boulevards. Greening of the schoolyards and kindergartens. Making landscape design projects.			
12. Learning methods Theoretical classes, assignments, preparation of seminar works, individual presentation (.ppt) and paper work, and via consultations.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	5 (3+2) / 75		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		40 hours
	16.2. Individual tasks		25 hours
	16.3. Home learning		20 hours
17. Assignments and grading	17.1. Seminar work / project	up to 30 points	
	17.2. Active participation in classes	up to 10 points	
	17.3. Final exam	up to 60 (2x30/60) points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2.		
20. Language in which lectures are held	Macedonian		
21. Methods of monitoring the quality of teaching	Internal evaluations and surveys		

22.	Literature					
	22.1.	**Compulsory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Ризовска Атанасовска Ј.	Урбано зеленило	Интерна скрипта	2012
		2.				
	22.2.	**Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Motloch J. L.	Introduction to Landscape Design	John Wiley and Sons, Inc, USA	2001
		2.				

1. Title of course	Opening the forests		
2. Code	ШФ168		
3. Study program	Forestry		
4. Organizer of the study program	UKIM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 5, 7 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Zdravko Trajanov			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) The objectives of the course is to train the students to open the primary forests and secondary roads. Preparation, analysis and application of adequate technical documentation for opening the forests.			
11. Course content Introduction, aim and task of this course; impact of various factors on the formation of the road network; opening of the forest in different configuration requirements; Mathematical models open the forests. Opening the forest with a network of export forest roads (primary road network), opening the forest with a network of forest skidding roads (secondary road network); Technical and economic indicators at the opening the forests. Other factors influencing the degree of openness of the forest; Process for the preparation of report (an opening forest-management unit with the primary road network and making the secondary road network one department) in order to introduce the students with the content and technique of making a plan for opening the forests.			
12. Learning methods Teaching is conducted in the form of a lecture (introduction to the theory of the case), exercises (making the elaborate for opening a forest-management unit with the primary road network and making the secondary road network for one department), terrain teaching - exercises (recognition field provided for opening the forests and introduction of models for opening the forests).			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	4 (2+2)/60		
15. Teaching activities	15.1. Lectures (theory)		30 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		/
	16.2. Individual tasks		40 hours
	16.3. Home learning		60 hours
17. Assignments and grading	17.1. Seminar work / project	80 points (2x40)	
	17.2. Active participation in classes	10 points	
	17.3. Final exam	10 points	
18. Evaluation criteria (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.	**Conditions for signature (verification of attendance of classes) and final exam**		Fulfillment of activities from 15.1 and 15.2.		
20.	**Language in which lectures are held**		Macedonian		
21.	**Methods of monitoring the quality of teaching**		Internal evaluations and surveys		
22.	**Literature**				
	Compulsory literature				
	No.	**Author/s**	**Title**	**Publisher**	**Year**
22.1.	**1.**	Z. Trajanov	Forest opening - authorized textbook	Faculty of Forestry – Skopje	2008
	2.	V. Jelacic	Opening of the primary and secondary network rood	Faculty of Forestry – Zagreb	1983
	Additional literature				
	No.	**Author/s**	**Title**	**Publisher**	**Year**
22.2.	**1.**	S. Angelov	Forest communication and transport	Faculty of Forestry – Skopje	2001
	2.	B. Mihic	Opening forest, design and construction of forest roads	Faculty of Forestry – Sarajevo	1972

1. Title of course	Diseases of forest trees		
2. Code	ШФ169		
3. Study program	Forestry		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	undergraduate		
6. Semester: I / 2	**7. Number of ECTS:** 6		
8. Lecturer: Assoc. Prof. Dr. Irena Papazova-Anakieva			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) This course provides detailed and comprehensive study of most important plant diseases in forestry.			
11. Course content Topics covered with this course include symptomatology, biology, systematics and other aspects of the plant diseases, this information will enable future forestry engineers to identify and take appropriate protection measures against each plant disease. The curriculum includes representatives from Ascomycetes (Taphrinales, Erysyphales, Hypocreales, Ophiostomatales, Diaporthales, Dothidiales, Helotiales, Rhytizmatales, Pezizales) Basidiomycetes (Uredinales, Agaricales, Aphyllophorales), Deuteromycetes (Coelomycetes, Hyphomycetes), several pathogens from Peronosporales and a small number of bacterial and viral diseases. Practical classes: During the laboratory exercises students are in direct contact with the samples from the collection (fungi, damages, plant samples with the common symptoms) or use appropriate diagrams, drawings and photographs.			
12. Learning methods Theoretical classes, interactive laboratory and field exercises, guided observation of specimens of various fungi; Field research, preparation of field reports, and paper work, and via consultations.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	4 (2+2)/60		
15. Teaching activities	15.1. Lectures (theory)		30 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		20
	16.2. Individual tasks		30 hours
	16.3. Home learning		50 hours
17. Assignments and grading	17.1. Seminar work / project	up to / points	
	17.2. Active participation in classes	up to 30 points	
	17.3. Final exam	up to 70 (2x30+10) points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2.		

20.	**Language in which lectures are held**			Macedonian		
21.	**Methods of monitoring the quality of teaching**			Internal evaluations and surveys		
22.	**Literature**					
	22.1.	**Compulsory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	I. Papazova-Anakieva	Diseases of forest trees (internal textbook)	UKIM - FOF	2009
		2.	Ушчуплиќ, М	Патологија шумског и украсног дрвеќа	Шумарски факултет, Сарајево	1996
	22.2.	**Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Sinclair, W. A. and Lyon, H. H.	Diseases of trees and shrubs	2nded.Cornell University press, Ithaca, New York	2005
		2.	Phillips & Burdekin:	Diseases of forest and ornamental trees;	Second edition. The Macmillan Press Ltd. London and Basingstoke	1992

1. Title of course	Pests of forest trees		
2. Code	ШФ170		
3. Study program	Forestry		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 5 (winter semester	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Sterja Načeski			
9. Preconditions for enrollment of the subject	None		
10. Course objectives (competences) Pests of forest trees is a detailed study of harmful insects on the forest ecosystems, their morphology, bionomy, damages and ways of monitoring their population representation and determine the most effective measures for their destruction. Special attention will be paid to the beneficial insects and their possibility of using the biological method of control of pests in the forest.			
11. Course content Theory: Introduction, harmful insects in the deciduous forests, harmful insects in the conifer forests and forest plantations, Land pests, Pests of forest seed. These are parts of a detailed study most important insects on forest ecosystems, their short morphology, biology, damages, significance, ways of monitoring their population representation and determine the most effective measures for their destruction. The most important beneficial insects (predators and parasites) and their power for use in biological control method. Practical classes: Practical introduction to the characteristics of different stages of development, the place of laying eggs, damages done through diet, place and manner of wintering, and other symptoms of the attack. Then the study of practical methods for monitoring their population density in forest ecosystems. To master the content used live and stuffed material of the most important pests in the forests of the Republic Macedonia and presentations prepared by students for certain types of harmful insects.			
12. Learning methods Teaching is conducted in the form of lectures, laboratory and field exercises, field work, consultations, exercises used presentations, material from live and stuffed insects, damage by insects and different types of insects and more Invertebrates			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	4 (2+2)		
15. Teaching activities	15.1. Lectures (theory)		30 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		20 hours
	16.2. Individual tasks		30 hours
	16.3. Home learning		50 hours
17. Assignments and grading	17.1. Seminar work / project	up to 20 points	
	17.2. Active participation in classes	up to 20 points	
	17.3. Final exam	up to 60 (2x30/60) points	
18. Evaluation criteria (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.	**Conditions for signature (verification of attendance of classes) and final exam**		Fulfillment of activities from 15.1 and 15.2.		
20.	**Language in which lectures are held**		Macedonian		
21.	**Methods of monitoring the quality of teaching**		Internal evaluations and surveys		
22.	**Literature**				
	22.1.	**Compulsory literature**			
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Sterja Nacheski	Pests of forests trees (authorized lectures)	UKIM -Skopje	**2002**
		2.	Ljupka Hadzi-Ristova	Forest entomology (1 and 2 part)	UKIM-Skopje	**1995**
	22.2.	**Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Ljubodrag Mihajlović	Forest entomology	University of Belgrade FF-Belgrade	**2008**

1. Title of course	Non-wood forest products		
2. Code	ШФ171		
3. Study program	Forestry		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 3 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Full Prof. Dr. Ljupco Nestorovski			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) The program in this course have goal to introduce the students with other (non-wood) forest products, their importance for forestry and other industrial branches, techniques and technologies for their harvesting and processing, the possibilities for harvesting in Macedonia, most important species, as well as their impact on rural development.			
11. Course content Course is divided into Theoretical and Practical topics. Theoretical topics: Introduction (goal and methods, characteristics of the work, obligations); Methodologies for determination of potential (theoretical, real); Classification of non-wood forest products; Harvesting of resin, bark, roots, leaf (techniques); Harvesting tools; Techniques for drying, packing and keeping. Legal obligation; Seasons; Fruit, seed, herbal plants, mushrooms harvesting techniques; Recognizing; Mineral materials. Practical topics Recognizing the most important species; Different harvesting parts; productivity and rent ability: capacity determination; Red list species.			
12. Learning methods Theoretical classes, assignments, preparation of seminar works, individual presentation (.ppt) and paper work, and via consultations.			
13. Total available time (duration of course)	60 hours		
14. Distribution of the available time	4 (2+2) / 60		
15. Teaching activities	15.1. Lectures (theory)		30 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		0 hours
	16.2. Individual tasks		50 hours
	16.3. Home learning		50 hours
17. Assignments and grading	17.1. Seminar work / project	up to 10 points	
	17.2. Active participation in classes	up to 10 points	
	17.3. Final exam	up to 70 (2x30+10) or 90 points	
18. Evaluation criteria (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.	**Conditions for signature (verification of attendance of classes) and final exam**		Fulfilment of activities from 15.1 and 15.2.			
20.	**Language in which lectures are held**		Macedonian (optional English)			
21.	**Methods of monitoring the quality of teaching**		Internal evaluations and surveys			
22.	**Literature**					
	22.1.	**Obligatory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	V. Popovic	Forest harvesting, III	Faculty of forestry-Belgrade	**1986**
		2.	M.Danilovic	Non-wood forest products	Faculty of forestry-Belgrade	**2016**
	22.2.	**Reccomended/ Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Lj. Nestorovski	Authorized textbook		**2010**
		2.				

1. Title of course	Forest growth and increment			
2. Code	ШФ172			
3. Study program	Forestry			
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje			
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate			
6. Semester:7(winter semester)	**7. Number of ECTS:**6			
8. Lecturer: Prof. Dr. PandeTrajkov				
9. Preconditions for enrollment of the subject	Attended: Dendrometry			
10. Course objectives (competences): The students will encounter the dynamics of growth of single trees and of whole forest stands provided different conditions of growth-place, with the forest productivity and the ability to improve the productivity.				
11. Course content: *Theoretical lectures*: a.Concept of growth, increment, and productivity. Quantitative ratio between the growth and the factors which influence it. Growth and increment of single trees during one vegetative season and throughout the trees' lifetime. Growth and development of stands. Productivity of forest stands from different trees species, management forms and site index. Ability to improve increment and productivity of forest plantations. *Practical lectures*: Defining and presenting the growth (tabular, graphical, and mathematical). Comparative studying of growth of single trees and whole stands of different trees species and site index. Preparing scenarios for improving productivity of concrete forest object.				
12. Learning methods: auditory and audio-visual Theoretical classes, demonstrative, collaboration, learning through lectures, learning through work.				
13. Total available time (duration of course)	150 hours			
14. Distribution of the available time	Contact classes: 4 (2+2) / 60			
15. Teaching activities	15.1. Lectures (theory)	30 hours		
	15.2.Practice (laboratory, auditory), seminars, team work	30hours		
16. Other forms of activities	16.1.Project tasks			
	16.2.Individual tasks	15 hours		
	16.3.Home learning	75hours		
17. Assignments and grading	17.1. Exams	up to 60 (2 x 30)points		
	17.2.Seminar work / project	up to 20 points		
	17.3. Active participation in classes	up to 20 points		
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Conditions for signature: Attendance and participation in lectures, practice, and field work with a minimum of 10 points. Conditions for passing: Acquire a signature, get at least 31 points from partial exams (two) or final exam. Created seminar work minimum of 10 points. The final exam is not obligatory, but it is meant for those students which didn't pass through partial exams, or for			

				those who want to improve their scores achieved through partial exams.		
20.	**Language in which lectures are held**			Macedonian		
21.	**Methods of monitoring the quality of teaching**			-Internal and external evaluations and surveys. -Self-evaluation		
22.	**Literature**					
	22.1.	**Obligatory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Ivanovski Cvetko	Growth and increment of forests	UKIM	**1991**
		2.				
	22.2.	**Reccomended/ Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Vojislav Stamenovik MilivojVuckovik	Increment and productivity of stems and forest contents	Forestry faculty of Belgrade	**1988**
		2.	Chadwick D.Oliver& Bruce C.Larson	Forest Stand Dynamics	John Wiley & Sons, Inc	**1996**
		3.				

1. Title of course	Multifunctional forest management			
2. Code	ШФ173			
3. Study program	Forestry			
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje			
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate			
6. Semester:7(winter semester)	**7. Number of ECTS:**6			
8. Lecturer: Prof. Dr. PandeTrajkov				
9. Preconditions for enrollment of the subject	Attended: Phytocenology, Hunting			
10. Course objectives (competences): Students will meet the characteristics and functions of forests, principles of sustainable forest management, determining a priority function of the forest and an optimal structure of benefits.				
11. Course content: *Theoretical lectures*: The forest as a multifunctional system. The forest and the society. Directions and principles for benefiting from the complex forest resources. Characteristics of mono-purposed and multi-purposed management of forests. Structure of the benefiting of the forests. Materia‌l forest resources and ways of benefiting from them. Nonmaterial forest resources and ways of benefiting from them. Assigning degree of importance of the forest resources of multifunctional management of forests. Organizational basis of multifunctional management of forests (exercises and solutions). *Practical lectures*: Defining an optimal structure of benefiting from the resources of a concrete forest object. Content of a plan for multifunctional management of forests.				
12. Learning methods: auditory and audio-visual Theoretical classes, demonstrative, collaboration, learning through lectures.				
13. Total available time (duration of course)	150 hours			
14. Distribution of the available time	Contact classes: 4(3+1) / 60			
15. Teaching activities	15.1. Lectures (theory)	45hours		
	15.2.Practice (laboratory, auditory), seminars, team work	15hours		
16. Other forms of activities	16.1.Project tasks			
	16.2.Individual tasks	15 hours		
	16.3.Home learning	75hours		
17. Assignments and grading	17.1. Exams	up to 60 (2 x 30)points		
	17.2.Seminar work / project	up to 20 points		
	17.3. Active participation in classes	up to 20 points		
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Conditions for signature: Attendance and participation in lectures, practice, and field work with a minimum of 10 points. Conditions for passing: Acquire a signature, get at least 31 points from partial exams (two) or final exam. Created seminar work minimum of 10 points. The final exam is not obligatory, and it is meant for those students which didn’t pass through partial exams,			

				or for those who want to improve their scores achieved through partial exams.		
20.	**Language in which lectures are held**			Macedonian		
21.	**Methods of monitoring the quality of teaching**			-Internal and external evaluations and surveys. -Self-evaluation		
22.	**Literature**					
	22.1.	**Obligatory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	PandeTrajkov	Multifunctional forest management	Internal script	
		2.				
	22.2.	**Reccomended/ Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Vasil Stipcov	Multifunctional forest management	BSFP	**2006**
		2.	Kiril Bogdanov	Multifunctional forest management	LTU Sofia	**2002**
		3.				

1. Title of course	Identification and production of mushrooms		
2. Code	ШФ174		
3. Study program	Landscape design		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: кликни овде (summer semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Kiril Sotirovski			
9. Preconditions for enrollment of the subject	Signature for verification of attendance of classes of Phytopahology		
10. Course objectives (competences) Introduction to symptomatology and main characteristics of the most important plant diseases on prevailing ornamental plants in the country. Enabling students for their identification and application of control methods against those diseases.			
11. Course content Theoretical lectures: During lectures are covered the following fungal (*Botrytis cinerea; Rhizoctonia solani; Aspergillus niger; Sphaerotheca pannosa; Microsphaera begoniae; Erysiphe polyphaga; Oidium begoniae; Oidium chrysanthemi; Microsphaera berberidis; Microsphaera evonimi-japonici; Phillactinia guttata; Microsphaera platani; Uncinula aceris; Phyllactinia suffulta; Sphaerotheca pannosa; Leveillula taurica; Phyllactinia suffulta; Phragmidium mucronatum; Puccinia tanaceti; Peronospora sparsa; Diplocarpon rosae; Ramularia lactea; Philosticta draconis; Leptosphaeria sp.; Phomopsis spp.; Colletotrichum orchidearum; Gloeosporium liriodendri*), oomycete (*Phytophthora cinnamomi; P.cryptogea; P.parasitica; P.palmivora; Pythium sp.*); bacterial (*Erwinia carotovora subsp. carotovora; E. chrysanthemi; E.herbicola; Xanthomonas campestris*); viral (BMoV); (CMV); (DMV); (TMV); (TSWV); (INSW); (HRSV); (HCRSV), and other biotic and abiotic diseases on a large number of ornamental plant species which are used for both exterior landscaping and interior decoration. Practical classes: During practical laboratory classes, students are in direct contact with samples from the collection (fungi, samples with characteristic symptoms, damaged plants, microscopy samples), or various diagrams, drawings and photos are used. Field classes: Visits to nurseries for production of ornamental plants.			
12. Learning methods Theoretical classes and practical classes with samples in the microscopy classroom.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	Number of contact classes in week and semester 4 (2+2) / 60		
15. Teaching activities	15.1. Lectures (theory)		30 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		10 hours
	16.2. Individual tasks		40 hours
	16.3. Home learning		50 hours
17. Assignments and grading	17.1. Partial tests	up to 60 points (3 x 20)	
	17.2. Seminar work / project	up to 20 points	
	17.3. Active participation in classes	up to 20 points	

18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Condition for signature: Presence and activity in all forms of classes (lectures, practical, field), accomplished minimum 60% of point from the first partial exam – recognition of pathogens) Condition for passing exam: Verification signature, accomplished minimum 50% of the second and 50% of third partial exam, i.e. a total minimum of 51 point (%) from partial exams (three) or final exam.
20. Language in which lectures are held	Macedonian (optional English)
21. Methods of monitoring the quality of teaching	-questionnaire for students; -questionnaire for lecturers; -external evaluations; -self evaluation.

22. Literature

22.1. Compulsory literature

No.	Author/s	Title	Publisher	Year
1.	Sotirovski, K.	Disease of ornamental plants	Internal textbook	2003
2.	Sotirovski, K.	Workbook for practical classes	Internal textbook	2008

22.2. Additional literature

No.	Author/s	Title	Publisher	Year
1.	Karadzic, Milijasevic	Bolesti ukrasnih biljaka	Faculty of Forestry, Belgrade	**2001**

1. Title of course	Pests of ornamental plants		
2. Code	ШФ175		
3. Study program	Landscape Design		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 5, 7 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Sterja Načeski			
9. Preconditions for enrollment of the subject	None		
10. Course objectives (competences) Study of the most important pests and others. pests of ornamental plants and the measures to be undertaken for their suppression.			
11. Course content Theory: Designed to morphology, bionomy, harmfulness, meaning measures to destroy these pests from the group of Nematoda-nematodes, Aranei-spiders, Molusca-snails, Myriapoda-nereid and Insecta-insects (Fam.:Thrypidae,Cercopidae, Grylothallpidae , Grylidae, Acrididae, Forficulidae, Aphididae, Chermesidae, Coccidae, Pseudococcidae, Aleurodindae, Aradidae, Miridae, Scarabaeidae, Elateridae, Meloidae, Scolytidae, Cerambycidae, Chrysomelidae, Curculionidae, Gracilaridae, Hyponomeutidae, Tortricidae, Lymantridae, Geometridae, Noctuidae, Lasiocampidae, Sphyngidae , Pieridae, Tenthredinidae, Myrmicidae, Sphaegidae, Diprionidae, Cinipidae, Myrmicinae, Apidae, Tipulidae, Cecydomyidae, Antomidae, Agromisidae). Practical classes: Practical introduction to the characteristics of different stages of development (separately for each type), place of laying of eggs, damages done through diet, place and manner of wintering, and other symptoms specific for each pest.			
12. Learning methods Teaching is conducted in the form of lectures, laboratory and field exercises, consultations. To master the content used live and stuffed material mites, nematodes, insects and damage types of them.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	4 (2+2) / 60		
15. Teaching activities	15.1. Lectures (theory)		30 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		20 hours
	16.2. Individual tasks		30 hours
	16.3. Home learning		50 hours
17. Assignments and grading	17.1. Seminar work / project	up to 20 points	
	17.2. Active participation in classes	up to 20 points	
	17.3. Final exam	up to 60 (2x30/60) points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2.		
20. Language in which lectures are held	Macedonian		

21.	**Methods of monitoring the quality of teaching**			Internal evaluations and surveys		
22.	**Literature**					
	22.1.	**Compulsory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Sterja Nacheski	Pests of ornametales pests (authorized lectures)	UKIM-Skopje	**2009**
		2.	A. Rosnev, I. Daskalova	Protection ornamental plants	Zemizdat Sofia	**1989**
		3.	Z.A. Pencheva	Guidelines for the Protection of ornamental plants	Zemizdat Sofia	**1995**
	22.2.	**Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Ljubodrag Mihajlović	Forest entomology	University of Belgrade FF-Belgrade	**2008**

1. Title of course	Bonsai and miniature gardens		
2. Code	ШФ176		
3. Study program	Landscape design		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 7 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Vlatko Andonovski			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Introduction to the history, basic bonsai aspects and styles, as well as gaining knowledge for respecting and practicing of this art and skill. Introduction to the most important aspects and principles of miniature gardens, with special attention to Far East types.			
11. Course content Theoretical classes: Through lectures present the history and basic knowledge of bonsai, and studied in detail the following aspects: preparation techniques, materials, basic styles, mechanics of bonsai, bonsai aesthetics, planting and transplanting, training, pests and diseases, exposure and assessment of bonsai. Also represent the basic types and principles of design and implementation of miniature gardens. Practical classes: Through independent projects with supervising teacher, students involved in several stages of creating bonsai. Field work: Visit of the permanent exhibition of bonsai of representing styles aesthetic values, display and maintenance.			
12. Learning methods Theoretical lectures and practical exercises with plant material due to learning phases for creating a bonsai.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	3 (2+1) / 45		
15. Teaching activities	15.1. Lectures (theory)		30 hours
	15.2. Practice (laboratory, auditory), seminars, team work		10 + 5 hours (classroom + field work)
16. Other forms of activities	16.1. Project tasks		15 hours
	16.2. Individual tasks		40 hours
	16.3. Home learning		60 hours
17. Assignments and grading	17.1. Seminar work / project	up to 20 points	
	17.2. Active participation in classes	up to 20 points	
	17.3. Final exam	up to 60 points (3 x 20)	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Prerequisites for signature: Attendance and participation in all forms of teaching (Lectures, exercises, field teaching), acquired minimum		

			60% of the points from the first partial exam - recognition of bonsai styles). Requirement for passing: Obtained signature, obtained at least 50% of the second, and 50% of the third partial exam or an overall minimum of 51 points from partial exams (three) or final exam. The final exam is not mandatory, i.e. it is for students who have acquired only with signature in the Index / or not passed through continuous checking and students who want to improve the rating achieved through continuous knowledge verification during the semester.		
20. Language in which lectures are held			Macedonian (optional English)		
21. Methods of monitoring the quality of teaching			Internal evaluations and surveys		
22. Literature					
	Obligatory literature				
	No.	**Author/s**	**Title**	**Publisher**	**Year**
22.1.	**1.**	Yoshimura, Y., Halford, G.M.	The Japanese art of Miniature trees and landscapes	Charles E. Tuttle Company, inc. Publisher	1969
	2.				
	Reccomended/ Additional literature				
	No.	**Author/s**	**Title**	**Publisher**	**Year**
22.2.	**1.**	Adams, P.D.	The art of bonsai	Ward Lock	1981
	2.				

1. Title of course	Applied zooecology		
2. Code	ШФ177		
3. Study program	Landscape design		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 3 (summer semester)	**7. Number of ECTS:** 6		
8. Lecturer: Full Prof. Dr. Vladimir Maletic			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Introduction to the basic principles of contemporary zooecology as a basis for a lasting and environmentally sustainable management of natural and suburban ecosystems			
11. Course content Animal ecology - definition and basic definitions; Living conditions, abiotic, biotic and trophic factors; Homotype and heterotype population; Spatial distribution and structure of the populations; Fertility, fekundity, natality and mortality; Anthropogenic successions of biocenoses; Basic zoological characteristics of the birds and mammals; Bionomy, morphology and ethology of wildlife in suburban ecosystems.			
12. Learning methods Theoretical classes, assignments, laboratory and field exercises, field work and consultations.			
13. Total available time (duration of course)	105 hours		
14. Distribution of the available time	3 (2+1)/45		
15. Teaching activities	15.1. Lectures (theory)		30 hours
	15.2. Practice (laboratory, auditory), seminars, team work		15 hours
16. Other forms of activities	16.1. Project tasks		
	16.2. Individual tasks		30 hours
	16.3. Home learning		30 hours
17. Assignments and grading	17.1. Seminar work / project	up to 25 points	
	17.2. Active participation in classes	up to 5 points	
	17.3. Final exam	up to 70 points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Requirement for signature: Attendance and participation in all forms of teaching (lectures, laboratory exercises and field) with min. 3 points. Requirement for passing the final exam: Gained requirement for signature, passed theoretical part (three partial exams/final exam) and practice (colloquium) with at least 48 points. The final exam is not mandatory, i.e. it is predicted for students who have acquired only the signature in index/not passed through the three partial exams and for students who want to improve the success achieved through continuous verification during the semester.		

20.	**Language in which lectures are held**			Macedonian		
21.	**Methods of monitoring the quality of teaching**			Internal evaluations and surveys		
22.	**Literature**					
	22.1.	**Obligatory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Trpkov B.	Ловство (Hunting; in Macedonian)	UKIM	1985
		2.				
	22.2.	**Reccomended/ Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	R. Papović, J. Šapkarev	Animalna ekologija (Animal ecology; in Serbian)	Naučna knjiga – Beograd	1985
		2.	M. Đukanović	Ekološki izazov (Ecological challenge; in Serbian)	Elit – Beograd	1991
		3.	Z. Ristić	Lovstvo (Hunting; in Serbian)	Aston - Kragujevac	2008

1. Title of course	Flower arranging		
2. Code	ШФ178		
3. Study program	Landscape design		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 5,7 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Full Prof. Dr. Dana Dina Kolevska			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Students will gain knowledge about using flowers and other materials in flower arrangements. Gained knowledge will be applied in various biological and biological - technical disciplines.			
11. Course content The study material is divided into two parts: 1. Theory and 2. Practice. 1. Theory: Historic development of floral arrangement; Basic concepts in the arrangement; Aesthetic rules in floral arrangement; Styles and trends in the arranging. 2. Practice: Materials and arranging techniques; Floristic disciplines. Types of arrangements (dedicated, seasonal, holiday, religious); Arrangements of fresh and dried flowers.			
12. Learning methods Theoretical and practical classes, assignments, field exercises in floral shops and nurseries, field work and consultations.			
13. Total available time (duration of course)	105 hours		
14. Distribution of the available time	3 (1+2)/45		
15. Teaching activities	15.1. Lectures (theory)		15 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		
	16.2. Individual tasks		32 hours
	16.3. Home learning		28 hours
17. Assignments and grading	17.1. Seminar work / project	up to 35 points	
	17.2. Active participation in classes	up to 5 points	
	17.3. Final exam	up to 60 points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Requirement for signature: Attendance and participation in all forms of teaching (lectures, laboratory exercises and field) won with at least 3 points. Requirement for passing the final exam: Gained requirement for signature, passed the theoretical part (two partial exams / final exam, minimum 36 points) and practice (at least 7 points), worked up an elaborate (minimum 5 points), i.e. a total of minimum 51 points. The final exam is not mandatory, i.e. it is predicted for students who have acquired only the signature		

			in index / not passed through the two partial exams and for students who want to improve the success achieved through continuous verification during the semester.		
20.	**Language in which lectures are held**		Macedonian		
21.	**Methods of monitoring the quality of teaching**		Internal evaluations and surveys		
22.	**Literature**				
	22.1.	**Obligatory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Kolevska D.D.	Flower arranging (in Macedonian)	Internal textbook	2012
		2.				
		3.				
	22.2.	**Recommended/ Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Barnett F.	Flower arranging (in Serbian)	Лео Београд	
		2.				

1. Title of course	Agroforestry in rural development		
2. Code	ШФ179		
3. Study program	Eco-engineering and eco-management		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 4,6 (summer semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Nikolcho Velkovski			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Introducing students to agroforestry rural development, significance, role and opportunities for optimal use of agroforestry resources, systems and practices aimed at rural development.			
11. Course content Introduction, Historical development, Meaning and purpose of agroforestry in rural development, Definitions, Impact of natural conditions for development of agroforestry,The population as a factor in rural development and agroforestry,Rural infrastructure as a factor in rural development and agroforestry, Role of agroforestryin rural development,Impactof agroforestry on the optimal use of land space, Agroforestry systems, Natural heritage, Natural Resources, Agroforestry potentials, Agroforestry plantation, Agroforestry practices. Differences and similarities between natural ecosystems and agroforestry ecosystems, Influence and role of animal species and insects in agroforestry systems, Sustainable development, Protection on Agroforestry systems, Economic sustainability of agroforestry systems, Agroforestry prospects of rural development, Planning agroforestry in rural development.			
12. Learning methods Theoretical classes, assignments, preparation of seminar works, individual presentation (.ppt) and paper work, and via consultations.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	5 (3+2) / 75		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		40 hours
	16.2. Individual tasks		25 hours
	16.3. Home learning		20 hours
17. Assignments and grading	17.1. Seminar work / project	up to 20 points	
	17.2. Active participation in classes	up to 20 points	
	17.3. Final exam	up to 60 (2x30/60) points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2.		
20. Language in which lectures are held	Macedonian		

21.	**Methods of monitoring the quality of teaching**		Internal evaluations and surveys			
22.	**Literature**					
	22.1.	**Compulsory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Николчо Велковски	Агрошумарството во руралниот развој (скрипта)		**2014**
		2.				
	22.2.	**Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Young., A.	Agroforestry for soil conservation	CAB International, International Council for Research in Agroforestry	**1991**
		2.				

1. Title of course	Ecomonitoring			
2. Code	ШФ180			
3. Study program	Eco-engineering and eco-management			
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje			
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate			
6. Semester: 2,4,6 (summer semester)	**7. Number of ECTS:** 6			
8. Lecturer: Prof. Dr. Nikola Nikolov				
9. Preconditions for enrollment of the subject	none			
10. Course objectives (competences) The basic aim of this subject is to prepare the students in the field of monitoring of changes of environment, respectively recognizing the influences of different abiotic factors, biotic factors and anthropogenic factors (as a special factor).				
11. Course content - Basic concepts of the environment, - Factors that have influence of the environment - Principles and methodologies of ecomonitoring establishment. Practical education: Practical work of students on ecomonitoring methodologies. Field education: One day duration visit of location in Macedonia (the choice of the location depends of the current year)				
12. Learning methods Theoretical lectures and practical exercises in classroom and field, and via consultations.				
13. Total available time (duration of course)	160 hours			
14. Distribution of the available time	4 (2+2) / 60			
15. Teaching activities	15.1. Lectures (theory)			30 hours
	15.2. Practice (laboratory, auditory), seminars, team work			30 hours
16. Other forms of activities	16.1. Project tasks			20 hours
	16.2. Individual tasks			30 hours
	16.3. Home learning			50 hours
17. Assignments and grading	17.1. Seminar work / project	up to 30 points		
	17.2. Active participation in classes	up to 10 points		
	17.3. Final exam	up to 60 [(2x60):2] points		
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2. 17.1 min 13 points; 17.2 min 6 points; 17.3 min 33 points			
20. Language in which lectures are held	Macedonian (optional English)			
21. Methods of monitoring the quality of teaching	Internal evaluations and surveys			
22. Literature				

22.1.	**Compulsory literature**				
	No.	**Author/s**	**Title**	**Publisher**	**Year**
	1.	Nikolov, N.	Ecomonitoring	Internal script	**2011**
	2.	Vlatcovich, S.	Environment function of the forests	Belgrade	**1995**
22.2.	**Additional literature**				
	No.	**Author/s**	**Title**	**Publisher**	**Year**
	1.	Stanners, D and Bourden, F.	Europe's Environment The Dobris Assessment	Copenhagen	**1995**
	2.				

1. Title of course	Silviculture of forests with special purposes		
2. Code	ШФ181		
3. Study program	Eco-engineering and eco-management		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 5,7 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Nikolcho Velkovski			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) To familiarize students with the types of forest with special purpose (function), their meanings, functions, silviculture, regeneration and care measures.			
11. Course content Introduction, Historical development of forests with special purpose, Meaning, Specifics and Characteristics of forests with special purpose, Types of forest with special purpose and functions, Categories of forests with special purposes, Natural conditions and influence of bioecological factors on the forests with special purposes, Silviculture of forest with priority economic functions, Silviculture of forest with priority ecological functions, Silviculture of forest with priority scientific-research and educational purposes, Silviculture of forest with priority protective functions (erosion, avalanches, and other calamities), Silviculture of forest with regulation of water balance, Silviculture of forest in extreme unfavorable conditions, Silviculture of forests in the national parks, Silviculture of forests in the forest reserves, Silviculture of forests in the parks and park-forest, Silviculture of forests above the forest belt, Silviculture of forests in the seed stands, Silviculture of forests as nonurban greenery, Silviculture of forests in the hunting grounds, Silviculture of forests with cultural-historic and memorial aspects, Silviculture of plantations, Categories of protection accoprding to IUCN, Protected areas in the Republic of Macedonia, Silviculturual measuresof forest with special purposes, Regeneration methodsof forest with special purposes, Combined methods for regeneration of forest with special purposes, Sustainable development of forest with special purposes**.**			
12. Learning methods Theoretical classes, assignments, preparation of seminar works, individual presentation (.ppt) and paper work, and via consultations.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	5 (3+2) / 75		
15. Teaching activities	15.1. Lectures (theory)		45 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		40 hours
	16.2. Individual tasks		25 hours
	16.3. Home learning		20 hours
17. Assignments and grading	17.1. Seminar work / project	up to 20 points	
	17.2. Active participation in classes	up to 20 points	
	17.3. Final exam	up to 60 (2x30/60) points	
18. Evaluation criteria (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.	**Conditions for signature (verification of attendance of classes) and final exam**			Fulfillment of activities from 15.1 and 15.2.		
20.	**Language in which lectures are held**			Macedonian (optional English)		
21.	**Methods of monitoring the quality of teaching**			Internal evaluations and surveys		
22.	**Literature**					
	22.1.	**Compulsory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Zoran Govedar & Milun Krstić	Gajenje šuma posebne namjene	Univerzitet u Banjoj Luci Šumarski fakultet	**2015**
		2.				
	22.2.	**Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Николчо Велковски	Одгледување на шуми со посебна намена (скрипта)		**2016**
		2.				

1. Title of course	Raising and protection of wildlife fauna		
2. Code	ШФ182		
3. Study program	Eco-engineering and eco-management		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 4 (winter semester)	**7. Number of ECTS:** 6		
8. Lecturer: Full Prof. Dr. Vladimir Maletic			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Acquiring basic knowledge about methods of the growing and protection of fauna as part of the integral management of natural ecosystems			
11. Course content Basic features of the hunting and non-hunting fauna; Analysis of the impact of the fauna on natural ecosystems; Breeding measures as a part of integral forest management; Models of fauna protection; International criteria and national legislation; Guidelines for the management and protection of wildlife.			
12. Learning methods Theoretical classes, assignments, laboratory and field exercises, field work and consultations.			
13. Total available time (duration of course)	140 hours		
14. Distribution of the available time	4 (2+2)/60		
15. Teaching activities	15.1. Lectures (theory)		30 hours
	15.2. Practice (laboratory, auditory), seminars, team work		30 hours
16. Other forms of activities	16.1. Project tasks		
	16.2. Individual tasks		40 hours
	16.3. Home learning		40 hours
17. Assignments and grading	17.1. Seminar work / project	up to 15 points	
	17.2. Active participation in classes	up to 5 points	
	17.3. Final exam	up to 80 points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Requirement for signature: Attendance and participation in all forms of teaching (lectures, laboratory exercises and field) with at least 3 points. Requirement for passing the final exam: Gained requirement for signature, passed theoretical part (three partial exams / final exam) and practice (colloquium) with at least 48 points. The final exam is not mandatory, i.e. it is predicted for students who have acquired only the signature in index / not passed through the three partial exams and for students who want to improve the success achieved through continuous verification during the semester.		
20. Language in which lectures are held	Macedonian		

21.	**Methods of monitoring the quality of teaching**		Internal evaluations and surveys			
22.	**Literature**					
	22.1.	**Obligatory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Трпков Б.	Ловство (Hunting; in Macedonian)	UKIM	1985
		2.				
	22.2.	**Reccomended/ Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	I Gajic, Z. Popovic	Ловна привреда (Hun ting management; in Serbian)	Универзитет у Београду Пољ опривредни факултет	2010
		2.	Z. Mustapić	Lovstvo (Hunting; in Croatian)	Hrvatski lovački savez	2004
		3.	V. Selmic, D. Gacic	Ловство са заштитом ловне фауне (Hunting and game protection; in Serbian)	Универзитет у Београду Шумарски факултет	2011

1. Title of course	High-mountain ecosystems		
2. Code	ШФ185		
3. Study program	Eco-engineering and eco-management		
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje		
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate		
6. Semester: 4,6 (summer semester)	**7. Number of ECTS:** 6		
8. Lecturer: Prof. Dr. Kole Vasilevski			
9. Preconditions for enrollment of the subject	none		
10. Course objectives (competences) Introducing students to natural laws and characteristics of high mountain ecosystems.			
11. Course content Teaching material covers the following topics: Introduction, Legislation, International conventions on biodiversity, Functions of grasslands, Natural conditions, Orography (topographic relief), Climate characteristics, Geology and Petrography of grasslands, Hydrography characteristics, Pedology characteristics (soil conditions), Types of Pastures, Composition of grass types, Phytocoenology Plant communities affiliation, Typological characteristics, Important grassland communities in terms of biodiversity, Distribution, zoning and size, Production and Economy indicators, Infrastructure, Amelioration measures, Accessibility of pastures, Time of use of pastures, Sustainability, Protection measures, Literature.			
12. Learning methods Teaching is conducted in the form of lecture, lab exercises, consultations, training and field exercises.			
13. Total available time (duration of course)	160 hours		
14. Distribution of the available time	3 (2+1) / 45		
15. Teaching activities	15.1. Lectures (theory)		30 hours
	15.2. Practice (laboratory, auditory), seminars, team work		15 hours
16. Other forms of activities	16.1. Project tasks		/
	16.2. Individual tasks		55 hours
	16.3. Home learning		60 hours
17. Assignments and grading	17.1. Seminar work / project	up to 20 points	
	17.2. Active participation in classes	up to 20 points	
	17.3. Final exam	up to 60 (2x30/60) points	
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Fulfillment of activities from 15.1 and 15.2.		
20. Language in which lectures are held	Macedonian (optional English)		
21. Methods of monitoring the quality of teaching	Internal evaluations and surveys		

22.	Literature					
	22.1.	**Compulsory literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.	Vasilevski, K.	E-materials of High Mountain Ecosystems	UKiM FoF (auth. e-lect.)	2012
	22.2.	**Additional literature**				
		No.	**Author/s**	**Title**	**Publisher**	**Year**
		1.		Scientific and professional technical documentation		
		2.				

1. Title of course	Basics of planning and management of forests			
2. Code	ШФ186			
3. Study program	Forestry			
4. Organizer of the study program	UKiM Faculty of Forestry in Skopje			
5. Degree (undergraduate, postgraduate, doctoral)	Undergraduate			
6. Semester: Choose an item.(winter semester)	**7. Number of ECTS:**6			
8. Lecturer: Prof. Dr. Pande Trajkov				
9. Preconditions for enrollment of the subject				
10. Course objectives (competences): The students will acquire basic knowledge about the principles and elements of management of forests and with the structure and content of the forest management plans.				
11. Course content: *Theoretical lectures*: a. Forest, characteristics of forest, types of forest. b. Elements of management. Site index and factors of growth. Forest stands and types of forest stands. c. Structure of forest stands. d. Basic principles in forest arrangement. Forest management forms. Space as a factor in forest management (management division of space). Time as a factor in forest management (maturity, rotation). e. Sustainable management of forests. Normal forest. f. Yield and types of yield. g. Basic forest management systems. Methods for yield defining. Goals of management. Plans for achieving defined goals. *Practical lectures*: Forest management Plans. Legal basis. Structure and content of a forest management plans.				
Learning methods: auditory and audio-visual Theoretical classes, demonstrative, collaboration, learning through lectures, learning through work.				
13. Total available time (duration of course)	150hours			
14. Distribution of the available time	Contact classes: 4 (3+1) / 60			
15. Teaching activities	15.1. Lectures (theory)	45 hours		
	15.2.Practice (laboratory, auditory), seminars, team work	15 hours		
16. Other forms of activities	16.1.Project tasks			
	16.2.Individual tasks			
	16.3.Home learning	90 hours		
17. Assignments and grading	17.1. Exams	up to 80 (2 x 40) points		
	17.2.Seminar work / project			
	17.3. Active participation in classes	up to 20 points		
18. Evaluation criteria (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. Conditions for signature (verification of attendance of classes) and final exam	Conditions for signature: Attendance and participation in lectures, practice, and field work with a minimum of 10 points. Conditions for passing: Acquire a signature, get at least 41 points from partial exams (three) or final exam. The final exam isn't meant for all the students. It is meant for those who won't pass the partial exams, and those who want to improve their grade from the partial exams.			

20.	**Language in which lectures are held**	Macedonian
21.	**Methods of monitoring the quality of teaching**	-Internal and external evaluations and surveys. -Self-evaluation

22. Literature

22.1. Obligatory literature

No.	Author/s	Title	Publisher	Year
1.	Pande Trajkov	Basics of forest management	Internal script	

22.2. Reccomended/ Additional literature

No.	Author/s	Title	Publisher	Year
1.	Ilija Mihajlov	Forest management	UKIM	**1963**
2.	Milan Medarevik	Forest management Planning	Forestry faculty of Belgrade	**2006**
3.	----	Expert technical documentation	-----	**-----**