LENGTH OF STUDY

At the Faculty, students will gain knowledge in all three cycles. Study programs include a scientific area. The first cycle will last four years (240 ECTS), the second cycle will last a year 60 ESPB, and the third cycle of three years (180 ECTS).

Students who complete their studies will be trained to perform breeding planning, breeding ,forest protection and exploitation tasks in business systems

PLAN And study programme

FIRST CYCLE

ON THE JOINT JOINT SUBJECTS OF ALL STUDY PROGRAMMES ON THE FIRST CYCLE OF STUDI
We specify the complete curricula and all specificities of each case individually. The list and structure of mandatory and electoral cases, the number of points and their description according to the objectives, expected outcomes, knowledge and competences, the conditions for attending the case, the content of the case, the necessary literature, the methods of performing classes and the way in which knowledge and evaluation are checked is also covered. Classes are performed in semetry depending on it and the active classes fund **in the first cycle** is:

- In the first year of 10 classes of lectures per week and 10 hours a week of exercise,
- In the second year of 10 classes of lectures per week and 10 hours a week of exercise,
- In the third year of 10 classes of lectures a week and 10 hours a week of exercise.
- In the fourth year of 10 classes of lectures a week and 10 hours a week of exercise.

Professional practice is organized in each study year in the summer semester with 60 hours each. It is mandatory to create a graduate work after all exams are passed with the envisaged curriculum.

ACADEMIC, I.E. SCIENTIFIC NAME THAT IS REACHED AT THE END OF THE STUDY

	Study Program Name	type and level of study	Callher/Diploma
Social sciences			
	Management	Basic	Dipl. ing forestry
		Master's degree	Master of Forestry
		doctoral	Doctor of Forestry

First cycle: FORESTERY

Num.	Code	Case Name	Sam.	Guy	Status	Active Hours classes			Else Class	ESPB
						P	V	KV		
FIRST YEAR										
1.	Š11010	Informatics	1		O	2	2	5		6
2.	Š11020	Mathematics	1		O	2	2	5		6
3.	Š11030	Business English 1	1		O	2	2	5		6
4.	Š11040	Physiology and plant nutrition	1		O	2	2	5		6
5.		*Elective Subject 1*	1		IB	2	2	5		6
	Š1105AI	Management								
	Š1105BI	Software tools for statistics								
6.	Š11060	Tree anatomy	2		O	2	2	5		6
7.	Š11070	The basis of the economy	2		O	2	2	5		6
8.	Š11080	Forest botany	2		O	2	2	5		6
9.	Š11090	Business English 2	2		O	2	2	5		6
10.		*Elective Case 2*	2		IB	2	2	5		6
	Š1110AI	Sociology								
	Š1110BI	GIS in forestry								
Total classes						300	300			60
SECOND YEAR										
1.	Š12010	Chemistry	3		O	2	2	5		6
2.	Š12020	Geodesy	3		O	2	2	5		6
3.	Š12030	Venison growing	3		O	2	2	5		6
4.	Š12040	Forest typology	3		O	2	2	5		6
5.		*Elective Case 3*	3		IB	2	2	5		6
	Š1205AI	Petrography with geology								
	Š1205BI	Climate of forest and urban Area								
6.	Š12060	Pedology	4		O	2	2	5		6
7.	Š12070	Dendrology with dendrometry	4		O	2	2	5		6
8.	Š12080	Physiology and plant nutrition	4		O	2	2	5		6
9.	Š12090	Properties and protection of wood	4		O	2	2	5		6
10.		*Elective Case 4*	4		IB	2	2	5		6
	W1210AI	Forest communication								
	Š1210BI	Forest biometrics								
Total classes						300	300			60
THIRD YEAR										
1.	Š13010	Forest phytocenology	5		O	2	2	5		6
2.	Š13020	Human Resources Management	5		O	2	2	5		6
3.	Š13030	Forest genetics	5		O	2	2	5		6
4.	Š13040	Mechanization in forestry	5		O	2	2	5		6
5.		*Elective Case 5*	5		IB	2	2	5		6
	W1305AI	Forest exploitation								
	Š1305BI	Forest inventory								
6.	Š13060	Forest means of transport	6		O	2	2	5		6
7.	Š13070	Primary wood processing	6		O	2	2	5		6
8.	Š13080	Forest growth and yield	6		O	2	2	5		6
9.	Š13090	Hunting	6		O	2	2	5		6

10.		*Elective Case 6*	6		IB	2	2	5		6
	W1310AI	Seeding, nursery and afforestation								
	Š1310BI	Using hunting fauna								
Total classes						300	300			60

Ordinal Num	Code	Case Name	Sam.	Guy	Status	Active Hours classes			Else Class	ESPB
						P	V	KV		
FOURTH YEAR										
1.	Š14010	Forest entomology	7		O	2	2	5		6
2.	Š14020	Forest phytopathology	7		O	2	2	5		6
3.	Š14030	Forest protection	7		O	2	2	5		6
4.	Š14040	Forestry economics	7		O	2	2	5		6
5.		*Elective Case 7*	7		IB	2	2	5		6
	W1405AI	Petrography with geology								
	W1405BI	Antierosive afforestation								
6.	Š14060	Plantation forestry	8		O	2	2	5		6
7.	Š14070	Forest products	8		O	2	2	5		6
8.	Š14080	Information systems in forestry	8		O	2	2	5		6
9.		*Elective Case 8*			IB	2	2	5		6
	W1409AI	Trade in forest products	8							
	Š1409BI	Edit forests	8							
10.	Sh14100	Professional practice	8		O				60	
11.		Graduate work	8		O					6
Total classes						300	300			60

Second cycle: Magistriane studye

	Subject	Sam	Status	No.classes		ESPB
				p	v	
1.	Methods and techniques of research	1	O	3	3	8
2.	Tovantitative genetics	1	O	2	2	7
3.	Plant systematics	1	O	3	3	7
4.	Election Block 1	1	IP	3	3	7
	Protection of nature and protected natural goods					
	Investments in forestry					
	Spatial analysis in forest rye planning					
5.	Planning and forest rye	2	O	3	3	7
6.	Election Block 2	2	IP	3	2	7
	Basics of forest growth moderation					
	Forest biomass for energy					
	Biotechnology in thereproductionof wooden species					
7.	Election Block 3	2	IP	3	3	7
	Industrial production of medicinal plants					
	Afforestation for special purposes					
	Planning for hunting grounds					
8.	Master's degree	2	O			10
	Total classes			300	300	60

Doctoral studies

Basic core of doctoral studies

	Case Name	With	Case status	P	CHEESE	ESPB
FIRST YEAR						
1	Methodology of scientific research work	1	O	4	2	8
2	Knowledge management	1	O	4	2	8
3	Election Block 1 Subject	1	IB	3	1	7
	Comparative tree anatomy					
	Molecular genetics of forest trees					
4	Research paper on the selection of topics and overheating of literature for doctoral dissertation	1	About	0	4	8
5	Election Block 2 Subject	2	IB	3	1	7
	Dedicated production of forest reproductive material					
	Plantation production of medicinal, aromatic and spice plants					
6	Elective Block 3 Subject	2	IB	3	1	7
	Organisation, construction technology and management of construction of buildings in forestry					
	Degradation, protection, use and melioration of land					
7	Production and publication of the first scientific work	2	About	0	6	7
8	Doctoral Dissertation – Topic 1 Research	2	About	0	6	8
Total active classes per year of study =				255	345	60
SECOND YEAR						
1	Manage changes	3	About	4	2	8
2	Election Block Item 4	3	IB	3	1	7
	Phytopharmaceuticals					
	Applied zoology					
3	Election Block Case 5	3	IB	3	1	7
	Investments in infrastructure in forestry					
	Dynamics of tree growth and forest consistencies					
4	Doctoral Dissertation – Topic 2 Research	3	About	0	6	9
5	Election Block Case 6	4	IB	3	1	7
	Modern technologies in forest inventory					
	Useof the mind underaspecial severance					
6	Production and publication of other scientific work	4	About	0	6	8
7	Doctoral Dissertation – Topic 3 Research	4	About	0	10	14
Total active classes per year of study =				195	405	60
THIRD YEAR						
1	Doctoral Dissertation – Topic 4 Research	5	About	0	10	14
2	Writing doctoral dissertation (processing of doctoral dissertation data)	5	About	0	10	14
3	Production and publication of the third scientific work	6	About	0	6	9

4	Doctoral Dissertation – Research on topic 5	6	About	0	6	12
5	Defence of doctoral dissertation	6	About	0	8	11
Total active classes per year of study =				0	600	60
Total ESPB points						**180**

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**INFORMATICS**
Teacher:	
Case status:	**O**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Object Target
Introducing students to basic terms in informatics, as well as the importance of informatics for modern business. Developing practical skills in using program tools, which students will use during college schooling.

Outcome of the case
Students' ability to use text processing programs, table calculation, presentation making, and internet search.

Subject contents
Theoretical teaching
Development of informatics, Application of informatics, Basic concepts of computer system architecture, Microprocessors and microcomputers, Memory units, Input-output devices, Computer networks, Mathematical basicsof computer operation, Presentation, organization and structure of data,Solving computer application problems, System and application software
Practical teaching
Training students to work with basic text processing software tools, table calculation, presentation creation, and Internet search.

Literature
Basic:
Sotirović V., Egić B.: Informatics, Cekom 2006.
Supplementary:
Velimir Sotirović, Dragana Glusac: Standard PC software, Technical Faculty «Mihajlo Pupin» Zrenjanin, 2005.
Zoran Marošan: Initiation ofthe application of information technology, VPŠ Novi Sad,2004.

Number of active classes

Theoretical teaching: 2	**Practical teaching:** 2		

Teaching methods
Verbal-textual and demonstrable methods, methods of papermaking, seminar papers and projects, as well as the step-by-step method are used.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	30
practical teaching	15		
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**MATHEMATICS**
Usmeadow:	
Case status:	**O**
ESPB number:	**6**

Condition: 30 points won in pre-exam activities

Subject objective:
The study of thesubject mathematics should train students to understand and apply mathematics as part of the basic one-semester academic program and enable monitoring of all subjects using mathematical apparatus, as well as to enable students to be included in the work process in segments using mathematical methods

Outcome of the case
After mastering the curriculum, students will be trained to use mathematical methods and solve problems of modelling and extreme function values, problems of percentage, simple and complex interest account. In addition, this program will allow students to gain the appropriate knowledge necessary to understand the processes and theoretical contents of most sciences using mathematical methods.

Subject contents:
Theories
Basics of mathematical logic and theory of sets, relationships, functions and algebar structures.
Basics of differential and integral account, Prelude to linear algebra. In the Basics of Differentiated and Integral Account , students are familiar with the following mathematical content: The concept and characteristics of the real functions of a variable . Strings - term and string limit value. Function limit value. Asimptote functions Term statement. Use of the statement - monotony of function, extreme values, convexness, prewar points. Test the progress of the function. Function two variables. Partial expendation and total differential. Extreme function values of two variables. Conditional extremes. Unspecified and certain integral. Integration methods. As part of the topic, the prelude to linear algebra is studied: Matrix and matrix operations. The determinants. Inverse matrix. Linear algebar equation systems

Literature:
Velimir Sotirović, Momcilio Bjelica: Mathematics with a collection of tasks for students of technical faculties, University of Novi Sad, 2005.
Velimir Sotirović, Aleksa Macanović: Mathematics, University ofNovi Pazar, 2008.
Dragan Vukdelija and associates: Mathematics for economists,Faculty of Economics Subotica, Novi Sad,2005.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal textual

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**BUSINESS ENGLISH 1**
Teacher:	
Case status:	**O**
ESPB number:	**6**

Condition: Pre-exam obligations fulfilled

Subject objective:
Introducing students to the basics of general and business English with occasional reviews of professional vocabulary. Developing two of the basic skills: reading, writing. Mastering the professions needed to understand unknown text*(skimming and scanning)*in certain situations, mastering the basics of business correspondence.

Outcome of the case:
After listening to and learned content, the student should have developed linguistic competence at a lower-initial level, successfully achievable communication through constant repetition and method *TPR (TotalPhysical Response)* and *Communicative Approach* in primarily everyday situations, adoption of professional vocabulary and characteristics of academic writing at a lower – medium level.

Subject contents:
Theoretical teaching:
Lecturesintroduce students to the basics of general and professional English through topics such as: presentation and introduction, phone calls for business and private purposes, interpersonal relationships in the workplace, health, security, IT in large companies, writing e-mails.
Practical teaching:
drilling – rehearsing a new vocabulary through constant repetition and meaningful, contextual use in the form of dialogue, teamwork, group work, checking adopted material through dictates and *role plays*.

Literature:
Mandatory literature:
1. Bob Dignen, Steve Flinders, Simon Sweeney, 2004, *English 365*, level 1, 15 units, CUP, Cambridge
Recommended literature:
1. Murphy, Raymond, 2000, *English Grammar and Use,*CUP, Cambridge
2. Swan, M., Walter, C., 2004, *How English Works,*Oxford University Press, Oxford
Dictionaries:
1. *Oxford English Serbian Student's Dictionary*, OUP, Oxford, 2007
2. *Longman Dictionary of English Language and Culture*,Longman, Harlow, Essex, 2003

Number of active classes				Other hours:
Lectures: 2X15=30	Exercises: 2X15=30	Other forms:	Study research work:	

Methods of teaching:
Verbal textual, illustratively demonstrable

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**PHYSIOLOGY AND PLANT NUTRITION**
Teacher:	
Case status:	**O**
ESPB number:	**6**

Condition:
30 points won on pre-exam activities

Subject objective:
The aim of the subject Philosophy and plant nutrition is to evaluateresearchin plant physiology and integratethese knowledge into plant functioningmodels, the ability to criticallyunderstand plantphysiology and improveskillsin the design ofexperiments and in analysis.

Outcome of the case:
Students will be trained to understand the basic functioning of plants , as well as factors that affect svarrangement intheletterand permanent growth in plant productivity and efficiency , as the basis forimproving forests.

Subject contents:
The initiator. Meaningofherb physiology. Hthe emic composition of the plant body. Enzymes. Water and plant cells. Receiving, conductingand exclusionof water inthe plant. Mineral plant nutrition - reception and availability of mineral substances, role of mineral nutrients, mykorosis. Assimilated mineral substances. Transfer of dissolved substances. Haemoautotrophy, photoautotropy, structure of the photosynthetic apparatus, photosynthetic reactions, fluid of external factorsonphotosynthesis, heterotrophic diet. Cellular breathing - aerobic, anaerobic. Breathing the whole plant. Regulation of cellular change of substances. Growth, differentiation, aging, organ waste. Herbal hormones, auksins, giberelins, cytokines, abscisins and other physiologically active substances. Temperature action on the growth and development of wooden plants, belly bud dormancy, seed dormantity, dormantity of embryos. Light action on the growth and development of wooden plants, phytochromes, photomorphogenesis, flowering control. Physiology of fertilization, processes from fertilization to maturity of the fruit, germination of seeds. Sailing forest trees. Surface protection of the plant and defensive substances. Stress physiology, resistance of wooden plants to low and high temperatures, resistance of wooden plants to drought, resistance of wooden plants to pH soil values. Lack of oxygen in the soil, water, soil and air pollution, resistance of wooden plants to diseases. Physiology of motion, passive movements, organ movements, free locomotor movements, movements in the station, physical movements.

Literature:
Mandatory
Botany (morphology and physiology)
Recommended
Themanual for the
Physiological Plant Ecology

Number of active classes				
Lectures: 2X15=30	Exercises: 2X15=30	Other forms:	Study research work:	Other hours:

Methods of teaching:
Verbal textual, illustratively demonstrable

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**MANAGEMENT**
Teacher:	
Case status:	**IP**
ESPB number:	**6**

Condition:
30 points won on pre-exam activities

Subject objective:
The aim of the management case, as a scientific and teaching discipline, is to study the specific reality of the company, i.e. analysis of the very nature, and domain of management, in which the organization is potentiated as an environment of management, as well as understanding the performance factors of the company.

Outcome of the case:
Students will be trained to understand basic methods, principles and functions of management, factors that affect company dynamics, with the aim of creating conditions for permanent productivity and efficiency growth, as the basis for improving quality of life at all levels.

Subject contents:
The initiator. Historic management review. Scientific management. Frederick W. Taylor. Henry Gant. Harrington Emerson. Henry Fayol. Elton Mayo. Management definitions. Management functions. Basic principles of management. **Planning.** The nature of planning. Planning techniques. Managers and planning. Planning as a scientific discipline. Types of plans. Steps in planning. **Decision-making.** The concept of decision-making. Management and decision-making. Business decision-making. Decision-making process. Stages of the decision-making process. Group decision-making. Strategy and operational managementdecisions. **Organizing.** Structure and process of organizing. Line and taborganizing. Decentralisation of powersofassociation. Delegation of powersofassociation. Youknowthe delegation. Avoidingorganizing . **Theguidance.** Human inchoates inmanagement. Motivation and motivators. Motivational theories. The conceptofguidance. Definingleadership. Approachleadershipbased on the characteristics. Leadership styles. **Control.** Basic control process. Control as a feedback mechanism. Control types. The control process. Characteristics of reliable control. Information system and control. The 14-year-old's management ofcontrol. Control techniques. Business control. Direct and preventive control.

Literature:
Aboutthe new:
Syfert Zvonko: History of scientific thought management, Technical Faculty "Mihajlo Pupin", Zrenjanin, 2004.
Sajfert Zvonko, Djordjević Dejan, Bešić Cariša: Lexicon Management, Technical Faculty "Mihajlo Pupin", Zrenjanin, 2006.
Supplement: Bozidar Leković: Principles of Management, Faculty of Economics Subotica

Number of active classes				
Lectures: 2X15=30	Exercises: 2X15=30	Other forms:	Study research work:	Other hours:

Methods of teaching:
Verbal textual, illustratively demonstrable

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**SOFTWARE TOOLS FOR STATISTICS**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**6**

Condition: fulfilment of pre-exam obligations (30 points)

Subject objective:
Adoption of basic knowledge in the field of probability and mathematical statistics. Development of abstract opinion and analytical approach to problems. Training students to connect and employ acquired knowledge in professional subjects using software tools.

Outcome of the case:
The student is trained to apply statistical methods processed under this case. The student is ready to use the acquired knowledge in professional subjects and further education, and also in practice.

Subject contents:
Prelude to probability theory (set of elementary events, probability at discreet and continuous set, conditional probability, total probability formula, Bayes formula). Random discrete type variables (law and distribution function, distribution examples: binon, Poison, geometric distribution, two-dimensional random variable). Random continuous type variables (density function, distribution function, distribution examples: uniform, Gaus's normal, exponential, logarithmic). Transformations and numerous characteristics of random variables (mathematical expectation, dispersion, standard deviation). Prelude to mathematical statistics (arithmetic middle of the sample, sampling dispersion, histogram, polygon, empirical distribution function, fashion, median). Assessment theory (dotted ratings: moments method and maximum credibility method; interval ratings). Statistical tests (parameter hypotheses and significance tests, non-parameter hypotheses and significance tests: Hi2-test, Alpha-testKolmogorova). Sample correlation and regression.
Getting to know the enforcement of Excel-and in statistical research.

Literature:
Velimir Sotirović, Aleksa Macanović, Statistics, Novi Sad, 2007.
Velimir Sotirović, Zivoslav Adamovic: Methodology of scientific research work with statistics in Excel,Technical Faculty "Mihajlo Pupin" Zrenjanin, 2005.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-text, illustrative-demonstrative, software-engineering

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**TREE ANATOMY**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Fulfilment of pre-exam obligations (30 points)

Subject objective:
Gaining knowledge of the recognition of anatomical constructionofxylema woody plants as a prerequisitefor understanding the basic properties and behavior ofwood. The second objective is to achieve expertisein identifyingexistingcommercial typesof wood.

Outcome of the case:
Acquired knowledge from forest botania students will use in understanding the structure and function of wooden plants to understand the behavior of wood but also application in commercial exploitation.

Subject contents:
Withadaci anatomy of wood, pornate wood in the systematics of the plant empire. Commercial use. Methods of work in wood anatomy. Rough wood. Structure of vasculard. Origin and development of wood cells. Aboutcell rganization, size, modes of division, time of action, post-kmbicell growth. Station and cell wall. Composition and layout of the substance walls of wood cells. Submicroscopic material and organization of cellwalls. Cell wall sculptures. Macroscopic and wecroscopic material of quince wood . Macroscopic and microscopic material of leafwood . Comparative anatomy of various types of leafwood, key guide to identifying selected types of wood using magnifying glass. Wood identification: methods, border options, identification keys. Variations of wood structure within the species and inside the tree. Irregularities of wood build: Reaction wood, compression errors, fracture marrow, twisting of wire, lumps, false and interrupted gods.
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Literature:
Mandatory literature:
Wood anatomy
Additional literature:
Anatomy of European woods
Textbook of Wood Technology

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Lectures are performed by a combined method(ex catedra / case study). Theoretical teaching content is exhibited by the method "excatedra" with the support of computer presentations, the second part of the lecture is performed "casestudy"bymethod, i.e. by analysing characteristic cases and examples that illustrate theoretical content. Seminar work is mandatory for all students. The seminar paper includes the preparation of the production, presentation and defence of seminar work, which exercises the exercise of the technique of creativity, and through the topics of seminar papers the entire theoretical content of the subject is processed. Classes will be accompanied by examples from currentliterature. Students will actively monitor new knowledge from scientific publications.

Number of active classes				Other hours:
Lectures: 2X15=30	Exercises: 2X15=30	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual, illustrative-demonstrative

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**THE BASIS OF THE ECONOMY**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Fulfilment of pre-exam obligations (30 points)

Subject objective:
Acquiring knowledge in the field of the functioning of the market economy, especially seen from the point of view of the evolution of scientific thought about the market economy and the development of basic theoretical settings of market business, as well as the application of these settings in the modern market economy.

Outcome of the case:
Acquired knowledge from the basics of economics will be used by students in identifying different market phenomena and when solving the problems that their origins have in economic theory.

Subject contents:
Conceptual determination of economics, economic thought to the industrial revolution, classical political economy, marginalism, macro-economic analysis, social production, commodity production, production and development factors, conceptual designation of the market, market mechanism, conceptual determination of supply, conceptual determination of search, market mechanism and institutional influences, forms of market organizing.

Literature:
Mandatory literature:
Grozdanić R., Djordjević D., Basics of Economics, TF M. Pupin, Zrenjanin, 1999.
Bilic, S., Kunic, M., Krupić, I. (2010) *Basics of Economics,*High School "Center for Business Studies" Kiseljak.
Supplementary literature:
Djordjevic D., Besic C., Bogetić S., Basics of Functioning of modern economics, TF M. Pupin, Zrenjanin, 2004.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Lectures are performed by a combined method(ex catedra / case study). Theoretical teaching content is exhibited by the method "excatedra" with the support of computer presentations, the second part of the lecture is performed "casestudy"bymethod, i.e. by analysing characteristic cases and examples that illustrate theoretical content. Seminar work is mandatory for all students. The seminar paper includes the preparation of the production, presentation and defence of seminar work, which exercises the exercise of the technique of creativity, and through the topics of seminar papers the entire theoretical content of the subject is processed. Classes will be accompanied by examples from world literature. Students will actively monitor new knowledge from scientific publications.

Number of active classes				Other hours:
Lectures: 2X15=30	Exercises: 2X15=30	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual, illustrative-demonstrative

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**FOREST BOTANICALS**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Fulfilment of pre-exam obligations (30 points)

Subject objective:
Gaining knowledge of the basic meaningsofthe buildingand functions of plant cells and subcellular organization, and the outer and internal morphology of plants with an emphasis on themind plant species. The focusof thestudyis tissues with the organization and functions of individual types of tissue in the plant organism; anatomical organization and morphology of vegetative organs of trees, leaf and roots and organisations and functions of generative organs.

Outcome of the case:
Acquired knowledge from forest botania students will use in understanding the structure and function of plants to understand their functioning.

Subject contents:
Microscope, parts and handling, making temporary preparations. Observing cells epidermisa onion. Plantcell, shape and parts, primmed and secondary structure of the apartment wall. Plastics – chloroplasts, their shape and position, chromoplastics and leukoplastics. Protoplast products, starch grains, proteins, calcium oxanate crystals. Mytosis of body cells and meyosis cells. Basic tissues (parenchymal cells, flat knees, sclerenhimi) Submissive tissues (epidermis; peridermis and lenticella) Elements of translucent tissue, elements of xylema – tracheas and tracheids; elements fl oema – sieve tubes and companion cells. The primary structure of the monocotiledon plant tree and the closed type of collateral beam at the cross-section of the stem; the primary structure of the tree of dicotiledon plants at the cross-section of the tree. Secondary structure of the tree at the gooseseed at the cross-section of trees and dicotiledon plants at the cross-section of the tree. Anatomical organization of the list and morphology sheet. Morphology and anatomical organization of roots and morphologyof flowers andfruits .

Literature:
Mandatory literature:
Whichone, M., Pekic, S., Dajic, Z. (1998): Botany. Seventh and updated edition, University Udbenik, Belgrade.
Additional literature:
Daddy, N., Petković, B. (1998): Plant morphology. Institute for Textbooks and Teaching Resources, Belgrade.
Denfer, D., Ziegler, H. (1982): Textbook for high schools – morphology and fi ziology. School book, Zagreb.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Lectures are performed by a combined method(ex catedra / case study). Theoretical teaching content is exhibited by the method "excatedra" with the support of computer presentations, the second part of the lecture is performed "casestudy"bymethod, i.e. by analysing characteristic cases and examples that illustrate theoretical content. Seminar work is mandatory for all students. The seminar paper includes the preparation of the production, presentation and defence of seminar work, which exercises the exercise of the technique of creativity, and through the topics of seminar papers the entire theoretical content of the subject is processed. Classes will be accompanied by examples from currentliterature. Students will actively monitor new knowledge from scientific publications.

Number of active classes				Other hours:
Lectures: 2X15=30	Exercises: 2X15=30	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual, illustrative-demonstrative

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**BUSINESS ENGLISH 2**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Fulfilment of pre-exam obligations (30 points) laid business English 1

Subject objective:
Introducing students to the basics of general and business English with occasional reviews of professional vocabulary. Developing four basic skills: speech, reading, writing, and listening. Mastering the structures necessary for communication in certain situations (formal and informal), mastering the basis of business correspondence.

Outcome of the case:
After listening to and learned content, the student should have developed linguistic competence at a lower – medium level, successfully achievable communication in primarily everyday situations, adoption of professional vocabulary and characteristics of academic writing at a lower – medium level.

Subject contents:
Theoretical teaching:
Lecturesintroduce students to the basics of general and professional English through topics such as: presentation and introduction, phone calls for business and private purposes, interpersonal relationships in the workplace, health, security, IT in large companies, writing e-mails and replying.
Practical teaching:
drilling – rehearsing a new vocabulary through constant repetition and meaningful, contextual use in the form of dialogue, teamwork, group work, checking adopted material through dictates and *role plays*.

Literature:
Mandatory literature:
1. Bob Dignen, Steve Flinders, Simon Sweeney, 2004, English 365, level 1, 15 units, CUP, Cambridge

Recommended literature:
1. Murphy, Raymond, 2000, English Grammar and Use, CUP, Cambridge
2. Swan, M., Walter, C., 2004, How English Works, Oxford University Press, Oxford
Dictionaries::
1. Oxford English Serbian Student's Dictionary, OUP, Oxford, 2007
2. Longman Dictionary of English Language and Culture, Longman, Harlow, Essex, 2003

Number of active classes				Other hours:
Lectures: 2X15=30	Exercises: 2X15=30	Other forms:	Study research work:	

Methods of teaching:
Verbal textual, illustratively demonstrable

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Casename:	**SOCIOLOGY**
Teacher (surname, sr. letter, name):	
Casestatus:	**IP**
ESPB number:	**6**

Condition: 30 points won in pre-exam activities

Subjectobjective:
The aim of the case *sociology* is to provide basic information and knowledge about society as a context and factor that greatly determines our behavior, attitudes and values. They try to connect social knowledge to business ideas.

Outcome of the case
Students will have basic knowledge after successfully mastering the content of the subject , which will allow for better understanding in society as well as successful recognition of different social phenomena. The knowledge gained will also allow them to monitor other teaching subjects during their studies as well as academic general education.

Contents of the case:

Theories

Theoretical and methodological sociology. Methods and techniques for researching social phenomena. The importance of empirical research into social phenomena, Constituent elements of society: civilizational processes , cultural identity, ethnocentrism. The value and normative structure of society. Social interaction and everyday life. Social statuses and social decisions , Druptvena groups. Family. Social organisations , Social inequalities: social stratification; social elites. Horizontal and vertical social mobility, Social institutions , Political institutions , Social consciousness: ideologies, religion and morality, Social processes and social change, Sociocentric and mediocentric role of mass media, Management as a sociological theme, Sociology of a networked society; cyber-sociology; cyber-culture; virtual society.

Content of exercises

The exercises elaborate in detail by individual segments, through seminar papers, from the following areas: Applying methods and techniques in researching social phenomena, Research ing valuable orientation in young people, Exploring what social status means , Young people 's relationship to ideology, religion and morality, Social change and youth, Research on how mass media affect society 's consciousness , Sociological management viewing , Analysis of social networking sites .
"Virtually me and the cyber community"

Literature:
Basic: Zivorad Djordjević, Sociology,CEKOS BOOK, Novi Sad,2007.
Supplement: Markov, Slobodanka & Mirkov, Smiljana (1996, 1998, 2000, 2003), Sociology, Novi Sad

Number of **active classes**				Other hours:
Lectures: 2X15=30	Exercises: 2X15=30	Other forms:	Study research work:	

Methods of teaching:
Verbal textual

Knowledge score **(maximum number of points 100)**

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**GIS IN FORESTRY**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**6**

Condition:
Fulfilment of pre-exam obligations (30 points)

Subject objective:
Getting to know students with the latest achievementsits inthe field ofremote researchin our country and in theworld, theoretical basics of remoteresearch, types of recording systems andrecording systems, and the possibilitiesofapplying aero and satellite images in scarcity, toprotectnature and topreservethe environment. .

Outcome of the case:
Acquired knowledge forms the basis for remote research and prepares them for the establishment of geographical information systems, storage, processing and analysisof data, and theirupkeep and connection with other disciplines.

Subject contents:
Development, work, accuracy andeconomics of remote research, theehnologicaland physical basics of remoteresearch. Electromagnetic radiation. Remission and reflection. Characteristics of reflection from Earth's objects and atmosphere. Registering electromagnetic radiation. Recording devices. Sensor types. Photographic and non-photographic procedures. Types of remote research from space, fromatelitic recordings, radargrams, thermograms and risolation of satelliteimages. Methods of interpretation and prhymes of remote research. Remote research and GIS, razvoj, vreste and characteristics of technique and programming support and baze data. System design. Database record formats. Use of global positionsystems to maintain graphical databases. Fitting DI products into GIS. Vector and raster GIS. Data conversion. Digital relif model (DMR)-type, method of construction and application. Data analysis and creation of new layers in GIS. Takeone GIS in forestry.

Literature:
Mandatory literature:
Oluić, M., 2001: Recording and exploringEarth from space, HAZU, Zagreb.
Brukner, M., 1994: GIZIS – basics. INA-INFO, Zagreb.
Donassy, V., Oluić, M., Tomasegović, Z. (1983): DI in geosciences, Zagreb
Kereković, D. (ed.) 1997: GIS in Croatia, Infocentar d.o.o., Zagreb.
Supplementary literature:
Lillesand, T.M., Kiefer, R. W., Chipman, J.W., 2004: Distracte sensing and image interpretation, Wiley & Sons.
Howard, J.A., 1991: Remote Sensing of Forest Resources: Theory and Application, Chapman & Hall, London.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Lectures are performed by a combined method(ex catedra / case study). Theoretical teaching content is exhibited by the method "excatedra" with the support of computer presentations, the second part of the lecture is performed "casestudy"bymethod, i.e. by analysing characteristic cases and examples that illustrate theoretical content. Seminar work is mandatory for all students. The seminar paper includes the preparation of the production, presentation and defence of seminar work, which exercises the exercise of the technique of creativity, and through the topics of seminar papers the entire theoretical content of the subject is processed. Classes will be accompanied by examples from world literature. Students will actively monitor new knowledge from scientific publications.

Number of active classes				Other hours:
Lectures: 2X15=30	Exercises: 2X15=30	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual, illustrative-demonstrative

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
Colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**CHEMISTRY**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Case objective andcase file
I'm notgoing to let you do that, but i'm not going to let you do that. They are the basis for a successfulprocess in the plantanda homeduring their life cycle. Stic andherfrom chemistry are a prerequisite for a fortifiedeffectof thelikes ofarametara technology of forest cultivation.

Outcome of the casea:
Essential ly razumevanje fundamentalzakona in chemistry
Samostalno performance experimentata ipravilno tumaexperimentallni resultata
The skill of logical connectionis theoretical and experimental
Alithium approach solves the problem and the use of theoretical and experimental

Subject contents
Theoreticala nastava
It's an initiator. Basic zaconitis in chemistry. Chemical formulas and equations. Aggregate rock. Atom structure. Periodic table. Chemical connections. Chemical processes. Chemical fabric. It's a good thing. Electrolytic dissociating. Colloidal systems. Electrochemistry. Coordination compounds. It's hydrogen. Noble ghas. Halogen and halcogenic elements. Elements of a group of nitrates and carbon groups. Elements of the pine group. Zemnoalkal and alkal brooms. Too little elements.
Practitioner
It's a smile. The structure of the materia. Chemical bond. Influence the process of the problem. Chemical responsition speed. The creatures. Ion ic residues and rainbows in water and water creatures. The gain and stabilisation of colloidal systems. Qualitative and quantifying chemical analysis.

Literature
1. Predrag Djurdjevic, Milos Djuran, Mirjane Obradovic, General and Neorgan chemistry, Natural-Matematic Fukultet, Kragujevac, 1997.
2.M. Spasojević, L. Ribić-Zelenović, General Chemistry, Agronomist Fakultet, Cacak, 2008.
3.M. Dragojević, S. Stević, M. Popovic, V. Ščepanović, General Chemistry, Technological-Metallurgical Fukultet, Beograd, 2004.
4. Lenka Ribić-Zelenović, Miroslav Spasojević, Practicum General Chemistry, Agronomist FakultEt Cacak, 2004.
5. Lenka Ribić-Zelenović, Miroslav Spasojević, Collection of Zadataka from General Chemistry, Agronomski fakultet Cacak, Cacak, 2004.

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods
Lectures, exercises and consultations, independent and group work on the study of relevant sources; production and presenting seminar papers.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	30
practical teaching	15		
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**GEODESY**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
Familiarizing yourself with the basics of Geodesy, surveying instruments, measurement methods and processing of measurement results . Getting to know the types of surveying points and networks, the principles of forming surveying networks, necessary measurements in networks and the process of calculating coordinates and altitudes of surveying points Students will acquire the necessary knowledge of the methods of surveying measurements and processing of measured sizes, as well as on the purpose of surveying points, the principles of forming surveying networks, how to determine coordinates or altitudes of surveying points.

Subject contents

Theoretical teaching Intake, cartographic projections, coordinate systems, units of measurement. Measuring lengths, indirectly determining lengths, measuring horizontal angles, measuring vertical angles, measuring height differences, measuring total surveying station, based on measurement error theory. Pacing the directorate angle and lengths from the coordinates of the points. Trigonometric network, determination of approximate coordinates of the trigonometric point by cutting forward. Polygon network, train types, calculating coordinates in an inserted polygon train. Line network, counting dot coordinates on the line and administrative. Nivelman network, counting the angle of the rapper on the inserted Nivelman train.
Practical teaching Field exercise: length measurement, angle measurement, height difference measurement, field measurement processing. Calculating the directorate angle and lengths from the coordinates of the points. Calculating the coordinates of the polygon points on the inserted polygon train. Calculate the coordinates of points on the line and administrative. Calculating altitudes on a Nivelman train

Literatura
1. Kontić S.: Geodesy, Science, Belgrade, 1995.
2. Mihajlović K. - Lazic B.: Geodesy, Faculty of Forestry - Geokarta, Belgrade, 1992.

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**GAME GROWING**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file

The aim of the subject is to educate and train students for professional work in the field of hunting and hunting economy. At the end of his studies , the student is trained to develop and apply modern technologies and scientific achievements in hunting. The acquired level of knowledge ensures that it is easily, efficiently and fully enforced in practical work in the field of hunting.

The outcome of the case is the formation of experts with academic education who possess significantly expanded and deepened knowledge that forms the basis for originality in developing and applying ideas as well as the knowledge necessary to understand the scientific basis of hunting. The knowledge gained should enable the student to develop and apply modern technologies and scientific achievements in hunting, efficient practical work in the field of hunting, successful problem solving and transfer of his knowledge to the professional and general public. .

Subject contents

Theoretical teaching

Growing and protecting game as part of integral bossing; Principles of the modern (environmental) concept of game-raising and protection ; Wildlife farming and protection programmes in the hunting ground; Monitoring and realisation of programmes and plans, audit; Hunting basis and annual landfill plan ; Hunting ground, rating and boniting of hunting grounds; Determining the degree of use by number and structure; Determination of the number and structure of game; Ways to raise game; The basics of petty game cultivation and breeding measures; The basics of cultivation of large game and breeding measures; Adaptation of game produced in farms for settlement in hunting grounds; Farming of game; Hunting breeding and technical facilities; Protection of game from: predators, poachers and poaching, elementary disasters , intensive agricultural production.

Practical teaching

The production and realization of plans and programmes of farming and protection of game in the hunting ground. The process of monitoring the realisation of programmes and plans, audits. Planning and organization of hunting bosses. Hunting basis and annual bossing plan . Huntinggrounds, ratings and boniting hunting grounds. Determine the degree of use by number and structure. Determining the number and structure of game. Ways to raise game. Hunting breeding facilities. Hunting technical facilities. Game protection.

Literatura

1. Micević M. (1995): Hunting facilities, Dnevnik,Novi Sad.
2. Novakovic V. (1999): Jelen (Cervus Elaphus L.), Serbiašume,Belgrade.
3. Novakovic V. (2003): Wild Pig (Sus Scrofa L.), Hunting Federation of Serbia,Belgrade.
4. Novakovic V. (1996): Wild pucks, Serbiašume,Belgrade.
5. Ristic Z. (2005): Pheasant (Phasianus Colhicus) Memory, Sombor.

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**TYPOLOGY OF FOREST**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the subject is to educate and train students to classify forests, environmentally vegetative habitat characteristics as well as wood mass production and other polyvalent forest functions, with the aim of improving the existing state of the forest fund. It allows for the systematization of forest ecosystems based on the ecological and production classification of cations into forest types and on this basis proposes the most purposeful measures for successful forest landlording, preserving and advancing: habitat, biodiversity, productivity, and other general functions of the forest.
The outcome of the case is the formation of experts with academic education who possess significantly expanded and deepened knowledge for systematizing forest ecosystems based on environmental and production classification into forest types and on this basis proposes the most appropriate measures for successful forest landlording, preserving and improving: habitat, biodiversity, productivity, and other general functions.

Subject contents
Subject and task of forest typology , overview of forest typology development , typological classification of forests in BiH , principles, content and objective of forest typology , ecological and production phase of typological forest division , synthesis and display of results of typological research, carding vegetation, soil maping , synthetic typological map.

Literatura
Mandatory
Bucalo, V. (2002): Forest typology. University of Banja Luka, Shumarki Faculty.
Stefanović, V. (1986): The basis of forest typology. Faculty of Forestry, University of Sarajevo, Sarajevo.
Supplementary
Stefanovic, V.,Burlica, C., Dizdarević, H., Fabjanić, B., Prolić, N. (1977) Types of low degraded forests of the sub-Mediterranean area of Herzegovina, Šumarki faculty and Institute of Forestry in Sarajevo, Sarajevo.
Stefanović, V., et al. (1983): Ecological-vegetation rejonization of Bosnia and Herzegovina, Faculty of Forestry, University of Sarajevo, Sarajevo.

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**PETROGRAPHY WITH GEOLOGY**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the subject is to raise and expand the level of knowledge in geology, so that students acquire knowledge from this, during their studies can also use in other subjects. From the point of view of needs in practice, this is a necessity that students face at the beginning of their studies, because the geological-petrographic basis allows for an understanding of pedology, i.e. pedogenesis and erosion-denudation processes in a broader sense.
The outcome of the case is the formation of experts with academic education who possess significantly expanded and deepened knowledge for Reating practical problems in forestry, problems, forest communications and arrangement oftorrents and land, cultivation, use and maintenance of forests, the impact of groundwater and surface waters on rocks and soil, fi zic-mechanical and chemical characteristics of rocks and blankets, terrain stability , etc..

Subject contents
Subject of geological studies, gbirth, composition and assembly withembryos, determination of the age of rocks, periods withemlyne geological past, mineralogy , genesis and material mineral, crystallographic systems, chemical composition of mineral, physical mineral characteristics, mineralisthematics, genetic groups of rocks, magmattic rocks, klasification of magmatic rocks , sedimentary rocks, p decomposition and destruction, transport and sedimentation, diagenesis, lasifi tothe ation of sedimentary rocks , metamorphic rocks, basic principles of metamorphism, classificationsofmetamorphic rocks , prvents of surface decomposition, genetic types of blankets, modern geological processes And praktic meanings in forestry.

Literatura
Mandatory
Sestanović, S. (1986): Basics of geology and petrography, Zagreb.
Basagić, M. (2000): Geology, Sarajevo.
Supplementary
Tyder, M. & Herak, M. (1972): Petrography and Geology, Zagreb.
Pamic, J. (1972): Basics of petrography, Sarajevo.
Herak, M. (1984): Geology, Zagreb.
Cicic, S. (2002): Geological composition and tectonics of Bosnia and Herzegovina, Sarajevo.

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**CLIMATE OF FOREST AND URBAN AREAS**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the case is to raise and expand the level of knowledge in climatology, the impact of climate factors, the impact of climate and climate elements and the phenomenon on the cultivation of phytocenes, and to gain knowledge of the negative climate effects on forest cultivation and exploitation.
The outcome of the subject is to master the basics of climatology through the study of climate elements and phenomena, and their modification by the impact of climate factors, understanding the essence of the impact of climate and climate elements and the phenomenon on the cultivation of phytocenes and the impact of negative climate effects on forest cultivation and exploitation.

Subject contents
Weather and air conditioning, solar radiation, with radiation for plants; Heat in the soil, water and air; The impact of heat on plants; Water in the atmosphere; Evaporation and evapotranspiration; Humidity; Fog and clouds; Precipitation; Air pressure; Dynamic processes in the atmosphere; Weather disasters; Climate types on Earth and climate types of Bosnia and Herzegovina.

Literatura
Mandatory
Segota, T. and Filipcic, A. (1996): "Climatology for Geographers", School Book, Zagreb.
Kolic, B. (1988): Forestry ecoclimatology with the basics of physics of the atmosphere. Science book, Belgrade.
Supplementary
Kolić, B. (1986): Macroclimatic reionization of northeastern Serbia. Faculty of Forestry, University of Belgrade, Belgrade. .
Krstic, M. (2005): Climate characteristics of the height belts of beech forests in Serbia. Monograph Beech in Serbia, Association of Forestry Engineers and Technicians of Serbia and University of Belgrade - Faculty of Forestry, Belgrade.

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**PEDOLOGY**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the case is to provide the student with basic knowledge of the most significant niche of land ecosystems, soil and sustainable soil management . Such knowledge is necessary for the adoption of knowledge of other niches and elements of the ecosystem.
The outcome of the case is to master the sampling skills and basic soil analyses necessary to understand and adopt knowledge of sustainable soil management.

Subject contents
Subject and work of pedology study, pedology development, soil specificity of different ecosystems, soil formation in nature, pedogenetic processes, mineral components of the soil, rock and mineral wear and properties of wear products, organisms as a source of organic soil and its builders, and products of degradation, circulation of substances in the soil system, soil properties as anisotropic and polydispersible natural body, fsorption characteristics; physical aspect of water in the soil; thermal propertiesof soil and chemical aspect of soilwater, soil migration processes, specific pedogenetic processes, pedogenetic effects, evolutionof soil, soil profile morphology, soil classification.

Literatura
Mandatory
Resulović, H., Chustović, H. (2002): Pedology. University textbook, University of Sarajevo.
Antić M., Jovic N., Avdalović V. (1990): Pedology. University textbook. It's a science book. Belgrade.
Basic, F. (1981): Pedology, University of Zagreb, Agricultural Institute Križevci, Križevci.
Supplementary
Ciric, M., (1984) It's pedology. Light, Sarajevo.
Resulović, H., Jovandić, P., Bisic-Hajro, J. (1982): Small paedological manual. Faculty of Agricultural Sciences, University of Sarajevo.
Krü4mann, G. (1981) Die Baumschule, Berlin und Hamburg.
Burlica, C., Vukorep, I., (1985): Working material for the exercises in the subject Pedology. Faculty of Forestry in Sarajevo.

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**DENDROLOGY WITH DENDROMETRY**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the case is to gain knowledge of indigenous and alohton tree and shrub species , specific features and the economic and environmental importance of species, measurement and variables in forestry, instruments and elements of propulsion inventory.
The outcome of the case is practical knowledge of the use of measuring equipment and the development of the ability to indivudally apply acquired for them.

Subject contents
The initiator. Measures and measuring systems. Measurement errors . Display metrics . Measuring the tree. Measuring the canopy. Measuring heights. Assessment of the surface of the tree cross-section . The volume of the tree. Sequencingmethod. Volume of fires and wood for chemical processing. Determination of the volume of the tree on the sweat . Shape number and odds . Tree volume tables (construction and application). The volume of the crust. The weight of the tree and its parts. Tree growth and growth. Percentage of growth. Total analysis. Relationships of all tree parameters in the constituent. Biological properties, morphological characteristics, number of species and areal strains of individual genus goosebearers and cryto-semen. Morphological characteristics, intra-perfect variability,areal , special features, and the economic and environmental importance of individual species within these genus. Indigenous and alohtone species of trees and shrubs.

Literatura
Mandatory
Jovanovic, B. (1985): Dendrology. Belgrade.
Anić, M. (1946): Dendrology. Forestry manual. It's Zagreb.
Herman, J. (1971): Forestry dendrology. It's Zagreb.
Šilic, C. (2005): Atlas dendroflore (trees and shrubs) of BiH. Obitluk
Supplementary
Fukarek, P. (1959): Overview of dendroflore B iH, National Forester, Sarajevo.
Fukarek, P. (1965): Our deciduous trees and shrubs. Ljubljana

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**PHYSIOLOGY AND PLANT NUTRITION**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the case is to gain knowledge of increasing the general productivity of woody species in natural and artificial consistencies and nursery.
The outcome of the case is practical knowledge in the management of forest ecosystems in order to increase the general productivity of woody species in natural and artificial consistencies and nurseries.

Subject contents
The meaning of plant physiology. Forest plants. A plant as a self-regulation cyber system. Culture in vitro and its importance for biotechnology of genetic engineering and tree cloning. Principles of adoption, transport and water emissions. The importance of solar energy for photobiological reactions of organic matter synthesis and the development and survival of life on planet Earth. Photosynthetic pigments of plants as monitors of the sun's light energy, their biosynthesis, concentration. The importance of the respiration process in the transformation of metabolite energy, and the processes of growing and developing plants. Plant diet types. Symptoms of deficiency, excess elements and nutritional needs of plants in the nursery, cultures, seed plantations and natural ingredients. Growth, differentiation, aging, organ waste. Growth inhibitors. Polarity, correlations, abscission, aging and dying plants. Physiological processes of fertilization in wooden species. Plant growth movements. Physiology of the diseased plant, the action of herbicides and the application of them in nursery production, in adult consistencies of cultures and natural consistencies.

Literatura
Mandatory
Nešković M. et al. (2003): Plant Physiology, NNK-International, Belgrade.
Singer-Kozlina B. (2003) Herb physiology, Profi l, Zagreb.
Castors R. (1998) Plant physiology, Verzal, Novi Sad.
Dubravec K.D., Regula I. (1995) Herb physiology, School Book, Zagreb.
Medjedovic S. et al. (2006) Initiating plant fiziology: Laboratory manual.
Supplementary
Raven P.H. et Johnson G.B. (1999) Biology, WCBC McGraw-Hill, Boston.
Taiz L. et Zeiger E. (2002) Plant physiology, Sinauer Associates, Sunderland.

Number of active classes			
Theoretical teaching: 2	**Practical teaching:** 2		

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**PROPERTIES AND PROTECTION OF WOOD**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the case is to gain knowledge of puppy effects, waysof protecting and specific knowledge of protection.
The outcome of the case is practical knowledge of the protection of trees, fruits and seeds until maturation, and after that.

Subject contents
The purpose of protection, harmful organisms and the impact of abiotic factors, methods of protection: forest economic, biological, chemical, biotechnological and mechanical measures, the course of theoretical and practical knowledge are observed to protect fruits and seeds until maturation, and after that, the protection of seeds from insects, mushrooms and small rodents, protection of plants in nurseries from landh and overhead harmfulto: insects, mushrooms, animals and weeds, protection specific to lowland, mountain and coastal forests.

Literatura
Mandatory
Igrc-Barcic, J., Maceljski, M., (2001): Ecologically acceptable protection of plants from pests, Zrinski d.d. Chakovec.
Vajda, Z., (1973rd) Forest protection science, school book. It's Zagreb.
Maceljski, M., Cvjetković, B., Igrc-Barcic, J., Ostojić, Z., (1997): Manual for plant protection. Institute for plant protection in agriculture and forestry of the Republic of Croatia. Printing press MD. Zagreb.
Supplementary
Altenkirsh, W., Mayunke, C., Ohnesorge, B., (2002) Waldschutz auf ökologischer Grundlage. Eugen Ulmer Verlag. Stuttgart.

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**FOREST COMMUNICATION**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the subject is to pass on elementary knowledge to students about the problem of forest communications, types of forest communications, and the stages of planning, design, construction and maintenance thereof.
The outcome of the case is the ability to apply knowledge independently in practice, with the purpose of addressing the problem of forest communications.

Subject contents
Animal and motor tow force. Resistance to the movement of the vehicle. Traffic washing on forest roads. The basics of opening forests. Importance, characteristics and division of forest roads. Planning forest truck roads. Turns, passers-by and serpentines. Longitudinal cross-section of the forest road, tilts, nivelettes and vertical curves. Basic elements of the forest road. Drainage ditches, and rigols, omissions, coating and support walls. Construction of forest roads. Machines for performing works. Types and dimensions of august structures. Bridges on forest roads. Forest cable cars. Laying zero lines on the field. Radius choice. Route stop. Leveling the route. Record transverse profiles.

Literatura
Mandatory
Pichman, D. (2007): Forest roads. University textbook, Faculty of Forestry, University of Zagreb. Jelicic, V.(1983): Forest roads and roads. SIZ forestry and wood industry, Zagreb Jelicic, V.(1975): Forest cable cars, sarajevo jelićić script, V.(1974): Bridges and failures on forest roads, Sarajevo.
Supplementary
Flögl, S.(1982): Construction of forest roads and railways, Zagreb.
Lalić, M.(1990): Abbreviated methods of designing forest roads, Belgrade.
Znideršić, B. (1963): Manual for carving circular curves, Belgrade.

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**FOREST BIOMETRICS**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The goal of the case is to learn ways to reduce data, their table, graphicand descriptive presentation using standard IT tools. Numeric continuous variables are analysed as the most important type of variable in order to model biological empirical distributions. Stochastic relationships of biological phenomena, and ways of assessing the characteristics of basic sample-based sets, are studied. Elementary IT support options are presented in analyzing, solving, and presenting research results.
The outcome of the case is practical knowledge of the basic mathematical statistical methods used to solve specific problems in forestry, and the ability to apply the presented method independently. The student should also be able to develop knowledge and ability to analyze numerical and descriptive data using modern technologies.

Subject contents
Basic terms of statistics and editing of statistical sets. Graphically display statistical sets. Central tendency measures. Variation measures. Measurements of the form of frequency distribution. Theoretical schedules. Random variable. Theoretical schedules. Regression-correlations analysis. Linear regression. Indicators of linear regression. Crivolinian regression Multiple regression. Net correlations. Rank correlation. Representative method. Distribution of sample statistics. Interval estimates of basic set parameters. Statistical tests.

Literatura
Mandatory
Sotirović, V., Macanović, A. Statistics, Novi Sad, 2012.
Koprivica M. (1997): Forestry biometrics. Forestry Institute. Belgrade.
Pranjić A. (1986): Forestry biometrics. Faculty of Forestry, University of Zagreb. Zagreb.
Supplementary
Macanović, A., Business Statistics, High School of Applied and Legal Sciences Banja Luka, Banja Luka, 2009.
Ljubović Ć. (1997): Mathematics. IP Light. Sarajevo.

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**FOREST PHYTOCENOLOGY**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the case is to acquire an idea of the ecological and vegetation characteristics of forest ecosystems through the introduction of forest plant communities in Bosnia and Herzegovina and neighbouring areas as knowledge of the diversity and complexity of the forest blanket, and the characteristics of forest phytocenes and their polyvalent importance.
The outcome of the case is to train students for everyday activities in forestry and give them the foundation for the most expedient actions inthe forest and its rational use while preserving environmental balance.

Subject contents
Subject and task of fitcenology. Mutual relationships of phytocenesis and the environment. Development of phytocenesis. Genesis, past and prevalence of phytocenesis. The general legality of the distribution of vegetation. Cartographic display of vegetation. Degradation stages of forests of Mediterranean regions. Thermophilic leaves forests of sub-Mediterranean and inner regions. Mesophilic oak forests. Hygrophilic forests. Beech forests and beech forests and eat with snot. Basiphilic forests of black and white pine. Ammo forests and basiphilic whale forests. Acidophilic four-legged forests. The kneeling of wrinkles and forests of green yoke.

Literatura
Mandatory
Stefanović, V. (1986): Fitcenology with a review of forest fi toothpicks of Yugoslavia. Light, Sarajevo.
Vukelic, J., Rausch. D. (1998): Forestry fi tocenology and forest fi toothesis in Croatia. Faculty of Forestry, University of Zagreb, Zagreb.
Tomic, Z.(2004): Forestry fi tocenology. Faculty of Forestry, University of Belgrade, Belgrade.
Supplementary
Stefanović, V., et al. (1983): Ecological-vegetation rejonization of Bosnia and Herzegovina. Faculty of Forestry, University of Sarajevo, Sarajevo.
Beus, V. (1997): Fitzenology. FBiH Ministry of Education, Science and Sports and "Sarajevo-Publishing" Sarajevo.
Vojniković, S. (2007): PhytoSynSyst 1.0 - Interactive guide to forest fi zetnosis of Bosnia and Herzegovina (CD). Association of Forestry Engineers and Technicians of FBiH, Sarajevo.

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**MANAGEMENT OF HUMAN RESOURCES**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Fulfilment of pre-exam obligations (30 points).

Subject objective:
Introducing students to the necessary knowledge and abilities from human resources management. Creating attitudes and interests towards human resources. Forming a attitude towards progression, selection and training.

Outcome of the case:
Knowledge, skills, aumenity, practical and theoretical knowledge in the field of human resources management. Withtherule of knowledge in the field of human resources and human management.

Subject contents:
Theoretical teaching: Defining human resource management. Content of human resources management. Elements of human resources management. Predicting human resources needs. strategic management of human resources. Human resources planning. Job analysis. Recruitment and selection of human resources. Motivation and reward. Employee education. Advancing people's resources. Career management. Stress. It's a fluctuation. Absentism.

Literature:
Vasiljevic, Dj.: Human Resources Management, NIR, Brcko International University, Brcko, 2015.
Syfert Zvonko: Human Resources Management, Technical Faculty "Mihajlo Pupin", Zrenjanin, 2006.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual and illustrative-demonstrative. Lectures, exercises and consultations, independent and group work on the study of relevant sources; and presenting seminar exercises.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20	.....	

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**FOREST GENETICS**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the subject is to provide the student with basic knowledge of methods in creating new cultural forms of plants, which are based on the results of population and evolutionary genetics.
The outcome of the case is training to participate in the creative evolutionary process of nature , in the contact of our today 's needs and to give the desired results.

Subject contents
Historical development of genetics, basic cell structure, chromosomes, DNA, organization levels and genome expression, bases of cell division, general genetics, related genes and recombinations, gender inheritance, extranuclear inheritance, mutations, population genetics, evolutionary genetics, application of biochemical and molecular-genetic research in forestry.

Literatura
Mandatory
D. Kajba, D. Ballian (2007): Forestry genetics. Your own bet, Sarajevo.
Vidaković, M., A. Krstinić (1985): Genetics and replenishment of forest trees. Liber, Zagreb.
Borojević, K. (1986): Genes and population. It's a forum. New Now.
Supplementary
Eriksson, G. & I. Ekberg (2001): An introduction to forest genetics. Repro, Uppsala.
Wright, J.W. (1976): Introduction to forest genetics Academic Press.
Paule, L. (1992): Genetics a šl'achtenie lesních drevín. Príroda a.s., Bratislava, 1992.

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**MECHANIZATION IN FORESTRY**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the subject is to train students to respond to the tasks of selecting and applying technological processes that have the use of machines in their composition. Through knowledge of the interaction effects of numerous factors of application of mechanization (technical, technological, ergonomic, environmental, energy and economic) the student would approach the optimal choice and application of those propulsion and working machines that require modern technical and technological development of forestry in the world and gain experience in the use of machines in forestry practice.
The outcome of the subject is the training of students to track teaching from related teaching disciplines in which technological processes imply the application of mechanization, i.e. as the final sequence independently, professionally and responsiblely designing and conducting technological processes at the level of engineering technical knowledge.

Subject contents
Pogon power in forestry and totheritery for choosing machines in forestry. Classifymachine rye in forest exploitation. Carroting,, corpse, splitting, splintering and combined machines. Machines in attracting wood. Aspects of technological applicability and ergonological eligibility of tractors in attracting wood. Winch and cable cars. Mechanized loading and remote transport agents. Classify the cation of machines in the cultivation and protection of forests. Mechanized plants in nurseries production. Mechanization in afforestation. Mechanization in forest protection and protection of wood varieties. Classificationof construction and melioration machines in forestry. Earthling machines and rock work. Compression, drainage and maintenance machines for forest roads .

Literatura
Mandatory
Kukušić, B. (1977): Forest exploitation, Faculty of Forestry, Sarajevo
Bestak, T. et al. (1973): Mechanization of agriculture, University of Zagreb
Hadzic, R. (2003): Construction machinery, Sarajevo
Supplementary
Stoves, E.et al.(1970): Forstmaschinenkunde, Verlag Paul Parey, Hamburg und Berlin.

Number of active classes			
Theoretical teaching: 2	**Practical teaching:** 2		

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**FOREST EXPLOITATION**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the subject is to introduce students to today 's importance and perspectives of forest exploitation, with the principles and principles of complex forest exploitation while acquainting practical knowledge of the application of appropriate technologies of work.
The outcome of the premise is the visibility of forestry students to organise and conduct technological processes of forest exploitation independently, professionally and responsibly.

Subject contents
Subject of study, importance and perspective of forest exploitation. Restrictions and restrictions onforestexploitation. Presetting and legality of the successful application of technological processes of forest exploitation. General characteristics and requirements for work in forest exploitation. Technologies and technological processes in forest exploitation. Technological processes in modern cutting and making forest wood varieties based on the application of machine aggregates. Technologies for making wood varieties in the warehouse. Terms and definitivesof attracting wood. Secondary network of roads in the function of attracting wood. Wood-attracting technologies. Characteristics of forest terrains as indicators of the choice of wood attractiontechnology. Remote wood transport. Transporting wood with trucks. Tranport wood by railroad. Water wood transport. The cost of remotely transporting wood. Forest exploitation systems.

Literatura
Mandatory
Kukušić, B. (1977): Exploitation of forests. Sarajevo Faculty of Forestry. Sarajevo
Popovic, V. et al. (1972): Exploitation of forests. Economic review. Belgrade.
Supplementary
Turk, Z. (1977): Methodof calculation of the economics of machine work in forestry. Faculty of Biotechnical Sciences in Ljubljana, Institute of Forest and Wood Economy. Ljbleached.

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**FOREST INVENTORY**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the subject is to introduce students to the most commonly used terms, concepts and methods used in inventory in forestry, to offer the most acceptable statistical design and method for covering the necessary information in accordance with the objectives set in inventory independently or in a team with other specialists; to plan independently the organization and realization of activities in inventory; to use and interpret information obtained on the basis of inventory in forests for different needs and at different levels; to permanently improve their knowledge by following and consulting achievements inthe field of forest inventory.
The outcome of the premise is the ostracisation of the application of student inventory , with theoretical basis and modern methods applicable in the implementationof national and other inventory of larger territorial units , with us and in the world.

Subject contents
Theoretical basics, task and position of forest inventory, pattern plans in forest inventory, inventory sample, characteristics of the stratified sample, characteristics of the sample group, characteristics of the two-phase sample, sample plans for interruption and category variables, stereometric method of determining the volume of the tree and parts thereof, tree shape indicators, volume table, dendrometric analysis method of tree, continuous inventory, national forest inventory, other inventures in forests.

Literatura
Mandatory
Mirković, D., Banković, S. (1993): Dendrometry. Faculty of Forestry, University of Belgrade, Belgrade
Pranjić, A., Lukić, N. (1995): Measurement of forests. Forestry facts, University of Zagreb, Zagreb
Supplementary
Matć, V. (1965): Method of forest inventory for large surfaces. And Part II. Forestry Institute of the Forestry Facultyof Aunts in Sarajevo,Sarajevo.
Kangas, A., Maltamo,M. (2006): Forest Inventory. Methodology and Applications. Springer, Netherlands
Shiver, B.D., Borders, B.E. (1996): Sampling techniques for forest resource inventory. New York, Chichester, Brisbane, Toronto, Singapore: John Wiley & Sons, Inc

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**FOREST TRANSPORT RESOURCES**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the subject is to introduce students to ways of measuring the mechanical sizes of forest machines, the basicparts of forest machines and the assessments of their convenience, the greenness of lubrication oil and the exhaust of internal combustion propulsion engines, as well as aspects of the transmission of forces from wheels to the ground.
The outcome of the case is the ability to determine the appropriate use of forest machines while respecting their technicalenvironmental characteristics.

Subject contents
Razvoj, the basisof the division of forest withtriplets for mechanizing works, measuring the mechanical and ergonomic features of forest machines, parts of forest machinery, breakdown of machinery (meansoflogging and manufacture, equipmentofhanised loading and unloading, special forest vehicles, machinery for mechanizing nursery production and breeding works in constituents),analysis of dynamic vehicle load, transmission of force from wheel to ground,basic mechanics of motor vehicles, machineryand for the extraction and use of forest biomass as an energy source.

Literatura
Mandatory
Kau, D., (1992): Mechanics of motor vehicles. Technical encyclopedia. WithBinding 1, Zagreb
Sever, S., (1992): Technical Encyclopedia, Lexikographic Institute Miroslav Krleza, Zagreb.
Supplementary
Pichman, D., Pentek, T., (1996): Forestry mechanization, Zagreb.

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**PRIMARY WOOD PROCESSING**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the case is toknow the forest products of wood linings, which arethe raw material basis for wood processing and the ways and features of the techniques and technologies of their acquisition and transport to the wood processing plant.
The outcome of the case is the ability to determine the appropriate application of primary wood processing techniques and technologies.

Subject contents
The problem of cutting and making trees, attracting and remotely transporting wood and their connection and interaction in modern wood extraction technologies , forest exploitation , planning and preparation of work, forest exploitation costs , application of laws, regulations and instructions, production standards and models , models of impact and cost analysis and thresholds viability of the use of technical means and technologies of logging, making and transporting wood as well as models of optimal density of roads when opening consistencies, assessment of trees in a deeper state, tree logging and forest product production , forest product standardisation , use of tree wood in logging and making, waste and structure of waste,bark, effects carcasses with a chainsaw , planning of cutting works , wood production and transport , calculation of the costs of machinery used in forest exploitation

Literatura
Mandatory
Bucan, G., (2001): Material technology for woodprocessing school. Department of Textbooks and Teaching Resources. Belgrade.
Supplementary
Dykstra, D.P., Heinrich, R., (1996): FAO model code of harvesting practice. The Roma.
Grammel, R., (1988): Holzernte und Holztransport. Verlag Paul Parey. Hamburg -Berlin.
Silversides, C.R., Sundberg, U., (1989): Operational Efficiency in Forestry – Volume 2: Practice. Kluwer Academic Publishers – Forest Sciences. Dodrechts/Boston/Lancaster.
Berg, S., (1992): Terrain Classification System For Forestry Work. Forest Operations Institute "Skagsarbeten".

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**FOREST GROWTH AND YIELD**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The objective of the case is to gain the necessary knowledge with the legalities of the growth and growth of individual trees and consists of the main types of trees, influential effects on growth and growth,
The outcome of the case is the ability to determine the appropriate applications of methods of measuring and determining the growth of trees and consistencies and to learn about growth and growth in the field of growing natural and artificially raised consistencies.

Subject contents
Defining basic terms; growth and growth of individual trees ; tree analysis , view of the growth flow and tree growth in height; a view of the flow of thickness, circular and volume growth and growth of individual trees ; comparison of the growth and growth of different types of trees; development and growth of single-age consistencies, clean and mixed; development and growth of converted consistencies; a representation of factors that define tree growth and development of consistencies; the pundits; the impact of competition on growth and growth; the impact of geomorphological factors on growth and growth; the impact of climate factors on growth and growth; the impact of biological factors on growth and growth; the impact of anthropological factors on growth and growth; determining the link between the elements of growth and economic procedures in one-time and pre-eminent consistencies; modelling of growth and development on a spatial-time scale; models of individual trees and consistency models; modelling of growth and development on a spatial-time scale; ecophysiological, suction and biomodels.

Literatura
Mandatory
Klepac, D., (1963): Growth and growth. Knowledge. Zagreb.
Supplementary
Pretzsch, H., (2002): Grundlagen der Waldwachstumsforschung. Parey Buchverlag, Berlin.
Pretzsch, H., (2001): Modellirung des Waldwachstums. Parey Buchverlag, Berlin.
Fritts, H.C., (1976): Tree Rings and Climate, The Blackburn Press. Caldwell. New Jersey.
Assmann, E., (1961): Waldertragskunde. BLV Verlagsgesellschaft, Munich, Bonn, Wien.

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**HUNTING**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the case is to introduce students to game farming technology in open hunting grounds and fenced space. , as well as thelans of hunting ground management, protected species and their habitat.
The outcome of the case is competence for future makers, enforcers and persons for monitoring hunting economic grounds, breeding programmes and wildlife protection programmes.

Subject contents
Technology of farmingand game in nature, in livestock farming in a fenced area, tehnic elements of fenced hunting grounds and farms, from gamefarms , damage done by game and harm prevention measures , econical elements of game farming , game-giving products , marketing presentation of game and hunting management, quality determination process habitats, determination of hunting ground capacity , preservation of optimal gender ratios and age structure of game, growth planning , farming and wildlife protection measures , protected animal species protection plans and revitalisation of endangered species.

Literatura
Mandatory
Darabush,S., and sur., (1980): The lead-up to hunting. Hunting Federation of Croatia,Zagreb.
Durantel, P., (2007): Hunting: practical encyclopedia. Leo commerce. It's Zagreb.
Kestercanek, F., Z., (1996): Hunting. Hrvatska Hunting Federation. It's Zagreb.
Supplementary
Cheovic, I., (1953): Hunting. Hunting book. It's Zagreb.

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**SEEDING, NURSERY AND AFFORESTATION**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the case is to remember knowledge of habitat for the establishment of plantations, to assess the use of newly raised plantations, to selection plant materials, to modify and repair habitats, planting techniques and special economic situations in tree management to different environments.
The outcome of the case is the training for the practical application of acquired theoretical knowledge and skills in the management of plantations and trees.

Subject contents
Forest seeding , forest nursery and tree and shrub plantations , forest seed material , forest seed types , chemical composition, physiological prerequisites for sailing, seed collection and handling, seed finishing , seed quality testing , morphological characteristics of seeds, seed storage , habitat selection for the establishment of forest nurseries , ways of producing plants, ways of growing seedlings, soil processing and storage, extraction and packaging of seedlings, seedling shipments , legal regulation and management in nursery, history of afforestation, reasons for raising plantations, predisposions and plantation flaws , selection of species in afforestation, number of plants and density, ways of raising , planting time , weed control , care, circumcision branches and patrols, rotation of species, lifting special purpose plantations .

Literatura
Mandatory
Matic, S., Harapin, M., (1986): Growing and protecting forests. Alliance of Engineers and Technicians of Forestry and Wood Industry, Zagreb.
Lanzara, P., Pizetti, M., (1984): Trees, Youth Book, Zagreb.
Supplementary
Krišković, P., (1989): Bioagriculture in practice, Mladost, Zagreb.
Burnie, D., (1992): Trees, Mladost, Zagreb.
Matic, S., (1994): Forests of high mountains and mountains of the Dinaric area. Ministry of Agriculture and Forestry of the Republic of Croatia,Zagreb.
Matic, S., (1991): Forest care in arow. Faculty of Forestry, Zagreb.

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**USING HUNTING FAUNA**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the case is to introduce students to how to use hunting fauna and manage hunting grounds.
The outcome of the case is the ability to determine the appropriate activities in the hunting ground and adequate economic financial bossing of hunting grounds.

Subject contents
Principles of modern hunting, breeding, protection, rational use, sustainable development, hunting ground, hunting grounds, basic data on hunting grounds, hunting ground users, hunting ground results, hunting ground status, hunting volume, measures to achieve objectives, measures to raise and protect game, measures to prevent damage, economic financial basis of hunting grounds, hunting works, hunting grounds.

Literatura
Mandatory
Radosavljevic, Z., Pantelić, A., Ceranić, A., (1995): Hunter and hunting. Book poljo, Belgrade.
Pear, T., (1998): Hunter and game, Alpha, Zagreb.
Supplementary
Prentovic, R., (2008): The Etika of Hunting Tourism, PMF, Novi Sad.

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**FOREST ENTOMOLOGY**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the case is to gain knowledge of the harmful action of insects, forest tree pests and methods and means of combating harmful forest insects.
The outcome of the case is practical knowledge in distinctionin insects of attacked and healthy plants , visual ptaillabelling of the mostimportant pests of forest trees and knowledge of methods and means of suppressing harmful forest insects.

Subject contents
The importance of insects in nature, onthe substance characteristics of theheadpiece circuit, aboutpshta entomology, gbirth ofinsect bodies, morphology, anatomy and fiziology ofinsects, einsect cology, razivo insects, withimptomies of attacks of harmful insects, dijagnosis and prognosis, mjera ofinsect control and suppression, ontroll and suppression of insects using other living organisms, totheoncept of integral protection of plants against harmful insects, isthe most conical lyrical harmful in sects in BiH and the region.

Literatura
Mandatory
Zivojinović, S. (1970): Forestry Entomology, Institute for The Issuance of Textbooks SR Serbia, Belgrade.
Vajda, Z., 1973: Science on Forest Protection, School Book, Zagreb.
Supplementary
Kovacevic, Z. (1952): Entomology applied. School book Zagreb.
It's Hagiristova. Lj. (1995): Forestry entomology I and Part II. University «St. Kirill and Methodius» Skopje.
Festić, H. (1996): Agricultural entomology, Light, Sarajevo

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**FOREST PHYTOPATHOLOGY**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the case is to gain knowledge of the causes ofthe disease, their life cycles, visible manifestations of presence on diseased plants and harmful consequences, as well as the methods and means of their control and suppression.
The outcome of the case is practical knowledge in distinctionin sick and healthy plants, visual ptaillabelling the presence of diseases and knowledge ofm methods and means of suppressing the disease to act in accordance with the needs.

Subject contents
Classifications of cation and nomenclature of mushrooms, bfruitscarcity, seeds and young plants, bolesti beech, oak and tame chestnut, maple, ash and fruit trees, poplars and willows, diseases of eating, snoring, pines, longitudes, aprons and pinetrees, parasitic flowering plants, an overview of the mass phenomena of diseases in the forests of Bosnia and Herzegovina and plandocumentsso far.

Literatura
Mandatory
Uscuplić, M. (1996): Pathology of forest and decorative trees. Faculty of Forestry, University of Sarajevo, Sarajevo.
Glavas, M. (1999): Fungal diseases of forest trees. Faculty of Forestry, University of Zagreb, Zagreb.
Supplementary
Hartmann, G. et al (2007): Atlas of forest damage. Mediaprint, Zagreb.
Agrios, G. (2004): Plant pathology. ELSEVIER Academic Press.

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**FOREST PROTECTION**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the case is to gain knowledge of the harmful action of agents, to identify the main manifestations and characteristics of harmful action, and to make useful organisms in forest ecosystems and measuresto protect forests integral.
The outcome of the case is practical knowledge in the management of forest ecosystems with a view to the axisofstaffing students to look at the harmful effects of agents, to observe glavv manifestations of harmful action and the role of useful organisms in forest ecosystems and to design measures of integral forest protection.

Subject contents
Task and goal of the case. Protected areas. Stability of the ecosystem. Stability disorders caused by the presence of pests. Stability disorders due to the presence of the cause of the disease. The character of harmful fauna for the stability of the ecosystem. The importance of harmful fauna. Restrictions on the application of pest control and suppression measures. Restrictions on the application of pest control and suppression measures. Components of the ecosystem in the function of controlling and suppressing the causes of the disease. Control and suppress harmful fauna by affecting food chains. A man and his role in the ecosystem. Monitoring harmful agents.

Literatura
Mandatory
Vajda, Z., 1973: Science on Forest Protection, School Book, Zagreb.
Zivojinović, S. (1958): Forest protection. Science book, Belgrade.
Supplementary
Group of authors (1981): Manual of reporting and diagnostic forecasting services for forest protection. Alliance of Engineers and Technicians of Forestry and Wood Processing Industry of Yugoslavia, Belgrade.
Petrovic N. (1968): Protection of quintuples from game and small rodents. Protection of cetinars, Yugoslav Agricultural Center, Belgrade.
Group of authors: 1980-1987: Forestry Encyclopedia I, II, III; Yugoslav Lexikographic Institute Miroslav Krlezagreb, Zagreb.
Hukić, M. and Šibalić, S. (2003): Viral hemorrhagic fevers. Off-Set d.o.o., Tuzla.

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**ECONOMICS OF FORESTRY**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The objective of the case is to gain knowledge to identify the specific action of economic legalities in the forestry activity.
The outcome of the case is to create the possibility that economic developments and processes happening in the field of forestry are directed towards sustainable management of forest resources in order to achieve the different requirements of society according to this renewable, natural resource. .

Subject contents
The intake of the case, the content and methods of forestry economics , themind as asocio-economic category, the application of the basis of financymathemes in the economics of forestry, dthe mining system ofproduction, production function, specificitiesof production inforestry, pforestry production and production factors, rezultati productionof thebottom in forestry, ekonomic – reproduction processes in forestry, protitability, capital return rate, vreturn on capital and production prices in forestry, forestry product market , cforestry products, money as a means of commodity exchange, value law and specificaction in forestry, rente in forestry.

Literatura
Mandatory
Ranković, N.(1996): Economics of Forestry, Faculty of Forestry,Belgrade.
Bilić, S., Blaznek, G., Bunjo, H., Glišić, J., Opakak, I. Company Economics 1, Mohor's Založba/Hermagoras Verlag, Klagenfurt, 2011.
Schmithusen, F. (2006): Entrepreneurship in forestry and the wood industry. Faculty of Economics, Belgrade.
Supplementary
Bilic, S., Kunic, M., Krupić, I. Basics of Economics, High School "Center for Business Studies" Kiseljak, 2010.
It's a whip. F. (2004): Initiating economics, Facultyof Economics .
Samuelson, P.A. and Northaus, W. (1992): Economics (translated), Mate, Zagreb.
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Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**PETROGRAPHY WITH GEOLOGY**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the subject is to acquire knowledge of geology, minerals androcks that build surface dlo fromembryos in order to get to know complex processes of rock decomposition, land formation to grow vegetation and form embosses.
The outcome of the case is the recognition of minerals and rocks, physical-mechanical characteristics and aesthetic values, understanding the characteristics of the terrain in order to plan and edit landscapes in landscape architecture and protect geodverse.

Subject contents
Prelude to the object, onmaterial data on the material fromthe embryos, characteristics of petrogenic minerals, petrological characteristics of the rocks of the lithosphere, technical and mechanical properties of rocks and their application as decorative and construction stone, decomposition of rocks and the importance of the process of erosion, transport and accumulation of decomposed material to the formation of embosses, age of the rocks of the lithosphere, geotectonic movements and exogenous processes as an element of the formation of embossed materials, characteristics of geotectonic rays of BiH.

Literatura
Mandatory
Tider, M. , Herak, M., (1966): Petrography and Geology, School Book Zagreb.
Supplementary
Zebec, V., Cepelak, M., (1984):Volcanoes and eruptive rocks, Mineralological Petrographic Museum Zagreb.
Vragovic, M. & Brajdić V., 1988: Metamorphic rocks, Croatian at theZagreb Genealogy Museum.
Babić, Lj. & Zebec, V., 1991: Sedimentary Rocks, Croatian Natural History Museum Zagreb.

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**ANTIEROZINE AFFORESTATION**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the case is to learn about the phenomena of torrential phenomena, with a focus related to erosion processes, types and ways of degradation of the terrain, as well as the principles of decorating torrential flows. The outcome of the case is to train students to override the dominant degradation processes on concrete field occasions , and on the basis of the knowledge gained through this course they primarily preventively implement measures to prevent the occurrence of erosion on forest terrain.

Subject contents
In general , eroded forest terrains, biological and technical works inthe sleepof eroded forest terrains, construction and technical works , static barriers, fromatime methods and facilities for editing torrents , withpecificor editing torrents, withtheanimatement of eroded forest surfaces as part of the editing of torrents, prhymesof new materials in the sleepof eroded forest terrains, microaccumulation and retention and their importance for forestry, pbirth, construction and maintenance of facilities anti-influenza and anti-erosion protection in forestry. .

Literatura
Mandatory
Jahic, M. (2006): Torrent editing, Faculty of Forestry, Sarajevo.
Jahic, M. (2003): Hydrotechnics, Technical Faculty, Bihać.
Supplementary
Kostadinov, S. (1996): Torque flows and erosion, Faculty of Forestry, Belgrade.
Gavrilović, S. (1972): Engineering about torque flows and erosion, "Construction", Belgrade.
Vucicevic, D. (1995): Editing of tortuous flows, Society of Torturers of Yugoslavia, Belgrade.

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**PLANTATION FORESTRY**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the case is to acquire knowledge of plantation lifting techniques as well asthe application of care measures, as well as on meliorationand degraded low forests into a higher breeding form.
The outcome of the subject is to train students to master plantation-raising techniques , and direct and indirect conversions of low degraded forests. .

Subject contents
History oftechi nka in raising forest cultures ; habitat and garbage; landscaping of the plantation area ; landprocessing, sowing and planting; mjere care culture and rebuttal; protection of cultures and planters; prhymes of fertilizer and garbage when raising plantations; mthe elioration of degraded forests and land and their implementation into a higher breeding form; tothe rhythm for the classification of degraded beech low forests from the point of view of melioration; tortoises; poljoprotective forest belts; parks; decoration of the appetizers.

Literatura
Mandatory
Mekic, F (1998) Nursery and plantations, textbook, Faculty of Forestry in Sarajevo.
Mekic, F. and Višnjić (2005) Implementing care measures in unnurtured culturesand.
Supplementary
Matic, S and others (1992) Forest cultivation, Forest seedlings, Forest nursery, Monographs i "Forests in Croatia", Zagreb.
Jovković, B (1952) Forest Seeding and Nursery, Sarajevo.
Lujić, R (1973) Forest melioration, Belgrade.

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**FOREST PRODUCTS**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the case is to gain knowledge of the immediate benefits of forest products that forest as a universal environmental system provides to people.
The outcome of the subject is to train students to classify forest products with their necessary values, how they are obtained and collected, as well as the possibilities for their use.

Subject contents
Forest wood products. Wood sorting and diameter regulations. Regulations on how dimensions are diametered and quantity calculated. Regulations on how to determine the quality of wood linings. Types of varieties according to a valid standard. European Standards (EN) for forest wood products. Mushroom world. Characteristics of mushroom fertility. Chemical composition of mushrooms. Medicinal herbs, collection, drying, accommodation, packaging, storage, protection of medicinal herbs in nature. Medicinal and eat herbs. Resins and tree juices. Ethical oils and wood greenery. Bark and forest waste.

Literatura
Mandatory
Kukušić, B. (1977): Exploitation of forests. Sarajevo Faculty of Forestry. Sarajevo.
Popovic, V. et al. (1972): Exploitation of forests. Economic review. Belgrade.
Uscuplić, M. (2004): Mushroom World. ANU BiH, Sarajevo.
Nikolic, S. Forest Exploitation (script). Faculty of Forestry in Belgrade.
Supplementary
JUS - Forest exploitation products.
EN - Round and saw timber.
BAS - Curved and cut wood.
Terzic, D. (1970): Study of the chemical composition of greenery of forest trees - raw materials for the production of livestock food concentrate. Special edition of the Faculty of Forestry and the Institute of Forestry in Sarajevo
Trezić, D. (1998): Research into the application of the black pine resin method. Edition of the Faculty of Forestry and the Institute of Forestry in Sarajevo.
Glawas, S. (1976): Ethical oils. Technical encyclopedia. Edition and edition of the Yugoslav Lexicographic Institute. Zagreb

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**INFORMATION SYSTEMS IN FORESTRY**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The subject aims to introduce students to new achievements in the implementation of information systems and their possibilities of applying from operational to strategic level in management.
The outcome of the case is training witha tudentusing modern software tools and systems to process large amounts of data and benefit results in business.

Subject contents
Introductory assumptions, platform, database, system modelling, standards, forest cadastre, planning, production, forest damage, personnel, equipment, financial overview, cash flows, incentives in forestry and hunting, customer and claims register, forestry Internet portal.

Literatura
Mandatory
Dr Velimir Sotirović, Dr Branislav Egić: Electron business, TIMS, Novi Sad, 2005.
Dr Velimir Sotirović, Dr Branislav Egić: Informatic technologies, University textbook, Technical Faculty Zrenjanin, 2005.
Supplementary
Tomanić, S., Novak, N.: Development of the information system in forestry, Šumarski List, Zagreb.
Tomanić, S., B. Meštrić & I. Martinić: IT challenge to the development of forestry, Faculty of Forestry, University of Zagreb, Zagreb.
Hasan Hanić: Mmanagement information systems, Belgrade 2004.
Overview of the state of IT equipment in forestry institutions and cantonal forest economic societies (9/2005).
Proposal for further steps for the development of a single IT system in FBiH forestry (11/2007)

Number of active classes			
Theoretical teaching: 2	**Practical teaching:** 2		

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**TRADE IN FOREST PRODUCTS**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the case is to introduce students to the concept of marketing as a business filosophya and offerthese knowledge necessary for the successful operation of forestry companies in market economy conditions.
The outcome of the case is to train students to discussthe specificitiesof the wood andnon-wood products and services market and successfully organize a marketing function in business forestry systems with a full understanding of changes in the dynamics of consumer priorities, the application of the principles of environmental and business ethics and the concept of corporate responsibility in the management of public goods.

Subject contents
The concept, concept and role of marketing, trade and markets in the market economy, andthestorial development of marketing of forestry products , andthestewardship of market opportunities, arelessons and choice of the target market, marketing mixin forestry, inmaking business contact in the woodtrade and aboutthebrightnessof wood sales, mmanipulation and preparation for the shipment and acquisitionof goods in the wood trade, standards in woodtrade, tothearachterists of the domestic and regional forestry product market, tothearachteristicsof the international forestry product market, rees external trade and technical instruments foreign trade policies, internationalconventions and rules for interpreting trade terms, Incoterms, withbusiness traffic, conclusion of wood sales contracts, colossal and business ethos, corporate responsibilities, p romaine in the consumer priority system and environmentally oriented purchase and saleof forestry products.

Literatura
Mandatory
Oerščanin, D., Redzic, A. (1994): Wood trade, Faculty of Forestry, University of Belgrade
Glavonjić, B., Petrović, S. (2004): Wood trade, Faculty of Forestry, University of Belgrade.
Supplementary
Sabadi, R., (1988): Basics of commercial technique, commercial policy and marketing in forestry and wood industry, Faculty of Forestry, University of Zagreb.
Kotler, P., (2001): Marketing management, analysis, planning, application and control, Gate, Zagreb.

Number of active classes			
Theoretical teaching: 2	**Practical teaching:** 2		

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**EDITING FORESTS**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**6**

Condition:
Pre-exam obligations fulfilled

Objective andcase file
The aim of the subject is to introduce students tothe regulationofm production and use of forests on the principle of continuity of landlords.
The outcome of the subject is to train students to use forest landlords on elements of spatial, infrastructure and social planning; that on the theoretical basis of science on professional forest restoration and care as well as permanently and rationally using forests to meet social needs for forest products.

Subject contents
Forest landscaping, specificities of production in forestry and the personality of the forestry economy, planning of forest landlords , coils of landlords shumama, ondreams of continuityof theiteof production, yields , maturity of sas toyin and production periods, systemsand ways of forest landlords , prostorne forest editing, inthe face ofcontinuity of forest landscaping and forest areas, device plans, forest economicbasis, tree classification , p roreverse devices, gplans and performance projects.

Literatura
Mandatory
Drinić, P., Bozalo, G. (1979): Spatial editing of beech forests, dishes and snoring depending on the selected bossing system, Sarajevo.
Matic, V., et al. (1990): Tables of taxation elements of high and treacherous forests in Bosnia and Herzegovina. Sarajevo.
Supplementary
Miletić, Z. (1958): Forest editing Part I and Part II, textbook, Belgrade.
Klepac, D. (1965): Forest editing, Zagreb.
Lelezal, B. 1972): Forest landssystems. Belgrade.

Number of active classes				
Theoretical teaching: 2	**Practical teaching:** 2			

Teaching methods

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Academic basic studies of the first cycle**
Case name:	**GRADUATE WORK**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**6**

Condition:
Fulfilled all teaching obligations.

Subject objective:
Developing the ability to connect knowledge acquired in class with the requirements of practical tasks and competence for expert-research rad in the domainofforests of the country.

Outcome of the case:
Acquired competences of candidates for planning , programming and research in the field of forestry.

Contents of thecase:
Graduate work is a subject on which candidates are trained for independent research, familiarize themselves with different approaches and methods of research, reference conventions and forms of presentation of research work. Theoretical teaching includes analysis of the situation in the field of research, overview of current topics, research problems, activity plan during research, basic methodological approaches to research, basic methods of data collection, access to analysis, interpretation in the presentation of research results.
The work on the case involves independent work in a selected area in which the candidate chooses and defines the topic, reviews different theoretical approaches and research of the topic so far, shapes the theoretical framework of work, defines a methodological approach and selects an adequate method of exploring the proposed topic processed on the project. The result of the work is the formulation of the structure and includes work and defining access to creation. The topic of work is seen and formulated in relation to current theoretical and practical problems in the field of traffic engineering.

Literature:
The choice of literature depends on the topic of thesis.

Number of active classes				Other hours:
		Other forms:	Study research work	

Methods of teaching:
Independent work of candidates.

Knowledge score: (ratings 6 to 10)

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Master's studies**
Case name:	**METHODS RESEARCH AND TECHNIQUES**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**8**

Condition:
Seminar work done and defended

Object Target
Getting acquainted with the methods of scientific research work and applying them in the handling of different research subjects.

Outcome of the case
Training for independent planning, conception and performance of scientific research projects

Subject contents
Principles of scientific research work. Methods of scientific research. Study and display literature. Select an area and define a theme and goal of research. Planning, methodology and performance of research experiments. Experiment tracking. Collect, analyze, and display experimental data. Processing the results of the research. Principles of writing scientific work. Types, classification and evaluation of scientific works. Criteria for evaluating a scientist. Writing and elements of scientific work. Technical presentations. Reviews of scientific workand. Scientific research projects. Ways to formulate and align research work with current trends and reference centers. Collecting, recording and quoting scientific literature. Classifications of scientific papers. Demonstration of selected techniques for collecting and analysing samples. Simulation of planning, setting up and building projects. Processing, displaying, and presenting data and results. Study research work, drawing up seminar papers for the projects.

Recommended literature
1. V. Sotirović, B. Egić, I. Tasic : Methodology of Scientific Research, Novi Pazar 2008.
2. Sotirović-Adamovic: Methodology of scientific research work, University of Novi Sad, Technical Faculty Mihajlo Pupin, Zrenjanin 2002.
3. Sotirović-Adamovic: Methodology of scientific research work with EXCEL statistics, University of Novi Sad, Technical Faculty Mihajlo Pupin, Zrenjanin 2005.
4. S. Borojevic: Methodology of expansional scientific work, Radnićki University Radivoj Cirpanov, Novi Sada 1978.
5.M. Sarić: General Principles of Scientific Work, Scientific Book Belgrade 1985

Number of active classes 4 + 2 (90)	Class: 4 x 15 = 60	Study research work: 30

Teaching methods
Verbal-text method, illustrative-demonstrative method, cyber/problem method.

Knowledge score (maximum number of points 100)
written exams – up to 25 points
oral– up to 25 points
project presentation – up to 25 points
seminars – up to 25 points

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Master's studies**
Case name:	**QUANTATIVE GENETICS**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**8**

Condition:
Fulfilment of pre-exam obligations (30 points).

Subject objective:
Introducing students to reproduction and inheritance of properties at the level of molecular, quantitative, population and evolutionary genetics with examples in forest trees. .

Outcome of the case:
The student will be trained tolearn variability and inheritance of qualitative and quantitative properties in forest treesindependently.

Subject contents:
The parameters of the variability of quantitative properties, types and examples of the inheritance of quantitative properties in forest trees, the occurrence of heterosis and transgression are processed. Inheritance of sex, specifics and genus hybrids, sexual incompatibility in forest trees. Students are familiar with the phenotypes of modifications, phenotypic stability, adaptability and genotype-environment interaction, and with hereditary and phenotypic similarity between relatives in forest trees, Population genetics, population structure, gene frequency changes (migration, mutation, selection). Hardy-Weinberg's law of balance in populations, genetic drift and testing of experimental data in forest tree populations is processed. .

Literature:
Kajba, D., Ballian, D., (2007): Forestry genetics. Faculty of Forestry, University of Zagreb, Faculty of Forestry, University of Sarajevo.
Eriksson, G., Ekberg, I., (2001): An introduction to forest genetics. SLU Repro. It's uppsal.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual and illustrative-demonstrative. Lectures, exercises and consultations, independent and group work on the study of relevant sources; and presenting seminar exercises.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20	.....	

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Master's studies**
Case name:	**PLANT SYSTEMATICS**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**8**

Condition:
Fulfilment of pre-exam obligations (30 points).

Subject objective:
Introducing students to a great variety of plant worlds, and the basic features of individual systematic groups.

Outcome of the case:
The student will be trained to independently interpret the biodiversity of the isisthematic divide of the plant world, categorize plant material and sort into a storage and identification system.

Subject contents:
Inception in plant systematics, data sources for systematics, basic characteristics of plants, phytography, professional terminology, nominal and systematic division of the plant world, basic characteristics of sections, basic characteristics of plant subdivisions, work with plant material, accessories, equipment, floral forms and diagrams, flora and vegetation.

Literature:
Nikolic, T., (2013): Systematic botany. Alpha, Zagreb.
Magdefrau, K., Ehrendorfer, F., (1984): Systematics, evolution, geobotany. School book, Zagreb.
Hulina, N., (2011): More tree plants. Golden marketing- technical book. Zagreb
Nikolic, T., (1996): Herbaric Manual. School book. It's Zagreb.
Electoral literature
Nikolic, T., (2013): Practitioner of systematic botany. Alpha. Zagreb
Dubravec, K., (1996): Botany. Faculty of Agronomy, University of Zagreb. It's Zagreb.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual and illustrative-demonstrative. Lectures, exercises and consultations, independent and group work on the study of relevant sources; and presenting seminar exercises.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20	.....	

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Master's studies**
Case name:	**PROTECTION OF NATURE AND PROTECTED NATURAL GOODS**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**8**

Condition:
Fulfilment of pre-exam obligations (30 points).

Subject objective:
Introducing students to the needs of sustainable development and nature conservation, as well as the importance and impact of protected areas for the conservation of biodiversity and natural restoration of biocenesis.

Outcome of the case:
The student will be trained to identify knowledge of the problem of nature protection and the environment in the country and the world, and trained to create environmental studies.

Subject contents:
Creation and development of protection, nature protection needs, protection objectives, categorisation of protected natural goods, natural environment in protected natural goods, tristical valorisation of protected natural goods, national parks, nature parks, exceptional qualities, nature reserves, nature monuments, roles and importance of protected areas, categories of protected areas, declaration of protected areas (World heritage areas, biosphere reserves, wetlands of international importance - Ramsar areas, European and world network of geoparks, IUCN categories of protected areas, primary function of national park and nature park, fundamental phenomena of protection, process of protection of new areas – permanent and preventive protection, process of abolishing area protection, development of nature protection in protected areas.

Literature:
Dudley, N., (2008): Guidelines for Applying Sold Area Management Categories, IUCN, Gland, Switzerland.
Martinić, I., (2010): Management of protected areas of nature - planning, development and sustainability. Faculty of Forestry, University of Zagreb.
Group of authors (2007): Protected natural goods of Serbia. Belgrade: Ministry of Environmental Protection and Institute for Nature Protection of Serbia.Pantic, N., Belij, S. and Mijovic, D. (1998): Geo-heritage in the system of natural values and its protection in Serbia.
Nature protection, 50.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual and illustrative-demonstrative. Lectures, exercises and consultations, independent and group work on the study of relevant sources; and presenting seminar exercises.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20	.....	

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Master's studies**
Case name:	**INVESTMENTS IN FORESTRY**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**8**

Condition:
Fulfilment of pre-exam obligations (30 points).

Subject objective:
Introducing students to the needs of investment and sustainable development in forestry.

Outcome of the case:
The student will be trained to identify knowledge of the problem of the importance of investing in forestry, and trained to create an investment plan.

Subject contents:
Financing and investments, External and internal financing, Content of parts of the financial statement. Specificity of balance sheet positions in forestry. Balance sheet. The assets. It's passive. Forms of balance show. Links between balance sheet assets and passive. Balance sheet of success. Connection of balance sheet and balance sheet of success, Balance sheet of capital flows and funds, investments in forestry, Financing of forest management. Investment, significance and homework. Assessment of specific balance sheet positions in forestry. Accounting separation of costs by activity-based costing. Balance sheet analysis. Analysis of the balance sheet of success. Determination of the results of the operations of forestry companies. Investment calculations. Methods of investment calculations; static and dynamic methods. Static methods of investment calculations. Cost comparison method. Method of comparing profits. Investment profitability indicators. Method of refund. Dynamic methods of investment calculations. Method of capital value of investments. Assessment of alternative use of forests.

Literature:
Schmithusen, F. (2006): Entrepreneurship in forestry and wood industry, Faculty of Economics, Belgrade.
Bilić, S., Blaznek, G., Bunjo, H., Glišić, J., Opakak, I., (2011): Company Economics 1, Mohor's Založba/Hermagoras Verlag, Klagenfurt.
Stajcic, T., Kutlić, J., Bilic, S., (2014): Accounting, Little Book, Novi Sad.
Winkler, I., (1994): Calculations of the price of woodwork, Biotechnical Faculty in Ljubljana, Ljubljana.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual and illustrative-demonstrative. Lectures, exercises and consultations, independent and group work on the study of relevant sources; and presenting seminar exercises.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20	.....	

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Master's studies**
Case name:	**SPATIAL ANALYSIS IN FOREST BOSSING PLANNING**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**8**

Condition:
Fulfilment of pre-exam obligations (30 points).

Subject objective:
Introducing students to the skills of using GIS in spatial analysing at a specific forest complex.

Outcome of the case:
The student will be trained for practical application in spatial analysing.

Subject contents:
Basic information about geographical information systems, map types and methodology for creating seminar work.soil protection, water protection, climate protection and determination of protective areas, converting maps from analogue to digital form, georeference, vectorization and printing prospects, making 3D field models and spatial analysis.

Literature:
Kushan, V., (1994): New techniques of measurement and cartography. It's Zagreb.
Lovrić,P., (1988): General cartography, SNL Zagreb.
Macarol, S., (2001): Practical geodesy, Zagreb.
Ziegler, T. , (1989): Inom Grenzstein zur Landcarte, Stuttgart.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual and illustrative-demonstrative. Lectures, exercises and consultations, independent and group work on the study of relevant sources; and presenting seminar exercises.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20	.....	

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Master's studies**
Case name:	**PLANNING AND BOSSING SHuMAMA**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**8**

Condition:
Fulfilment of pre-exam obligations (30 points).

Subject objective:
Introducing students to planning and bossing at a specific forest complex.

Outcome of the case:
The student will be trained to practically apply knowledge of forest bossing.

Subject contents:
Forest economic basis and annual forest landscaping plan, forest economic base, process of production and supervision of forest economic base, adoption of forest economic base, projects for the performance of trees, tree remittance and land marking, biological reproduction of forests, free biological reproduction, extended biological reproduction, calculation and payment of funds for biological reproduction of forests, compensation for the use of general useful forest functions, forestry works, forest rye works, technical reception of works, sanitary logging and other preventive measures, traffic of wood and other forest products, temporary confiscation of wood and other forest products, prohibition of placing on the market and storage, forests and forest land with a special management method.

Literature:
Pranjić, A., Lukić, N. (1995): Measurement of forests. Forestry facts, University of Zagreb, Zagreb
Jurković, S., (2004): Park realization of dream – Theory of garden art. Jurcic's. Zagreb, 2004.
Loetsch, F., Zöhrer, F., Haller, K.E., (1973): Forest Inventory, BLV Munich.
Davis, L.S. and Johnson, K.N., (1987): Forest Management, McGraw-Hill Book Company, New York.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual and illustrative-demonstrative. Lectures, exercises and consultations, independent and group work on the study of relevant sources; and presenting seminar exercises.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20	.....	

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Master's studies**
Case name:	**BASICS OF MODULATING GROWTH SHUMA**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**8**

Condition:
Fulfilment of pre-exam obligations (30 points).

Subject objective:
Introducing students tooptimal solutions in the field of forest growth and productivity, bioindications of the action of exogenous and endogenous factors on the vitality and growth of forests, analysing the diversity of structure and growth elements consisting in order to optimise the production process. .

Outcome of the case:
The student will be trained as carriers of innovation and technological improvements in the process of producing dendromace and ensuring the stability of forest ecosystems.

Subject contents:
Growth-settings and features models, Basic moderation principles, Organizing a model-making database, Formulating and checking hypotheses, Model description, Using models in research and practice, Opportunities and limitations of different types of growth models, Growth Legality and their biometric formulation. Preparation and organization of initial elements for complex growth simulation. Models: growth-climate, growth-habitat, competition models, growth-age models, ecophysiological growth models, canopy models, thickness growth and growth models, height growth and growth models, journal growth models and tree volumes and consistency, consistency density models, tree mortality model, structure and structural diversification models, growth and use models, quantity of mixture and differentiation. Regulating forest growth: the goal of regulating forest growth, forming decisions in the process of regulating forest growth. Optimization of dendromasa production.

Literature:
Pranjić, A., Lukić, N. (1995): Measurement of forests. Forestry facts, University of Zagreb, Zagreb
Jurković, S., (2004): Park realization of dream – Theory of garden art. Jurcic's. Zagreb, 2004.
Loetsch, F., Zöhrer, F., Haller, K.E., (1973): Forest Inventory, BLV Munich.
Cabaravdić, A., (2012): Planning experiments in biotechnical sciences. University of Sarajevo. Sarajevo.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual and illustrative-demonstrative. Lectures, exercises and consultations, independent and group work on the study of relevant sources; and presenting seminar exercises.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20	.....	

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Master's studies**
Case name:	**FOREST BIOMASS FOR ENERGY**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**8**

Condition:
Fulfilment of pre-exam obligations (30 points).

Subject objective:
Getting to know students in the field of using forest biomass for energy and using renewable energy sources, among which wood occupies a very significant place. .

Outcome of the case:
The student will be trained to make planning solutions crucial for choosing the appropriate technology and planning production when using forest biomass for energy in forests for different purposes.

Subject contents:
A tree as a power source. Regulation for splinters. Dimensions, husk content, and more. Technology of using forest biomass for energy in the mountainous and mountainous area (technological variants). Technology of using forest biomass for energy in the plain area. Collecting, balling and splintering the forest remnant. Energy use technology for now. And phase II of forest biomass transport. Organization of work on the jobs of using forest biomass for energy. Daily and unit costs of producing forest biomass for energy. Choice of means of work in the business of using forest biomass. Forest biomass warehouses. Natural drying of forest biomass. Forest biomass storage technology. Briqueting forest biomass. Optimization of the process of forest biomass production. It's a screw-up. .

Literature:
Calle, F. R., P. de Groot, S. L. (2007): Bioenergy for a sustainable environment, The Biomass Assessment Handbook, Hemstock, J. Woods, EARTHSCAN, UK.
Kaltschmitt, M., Streicher,W., Wiese, A., (2007): Renewable Energy – Technology, Economics and Environment, Springer-Verlag, Berlin-Heidelberg.
Udović, B., (1988): Energy and energy sources, Building Book, Belgrade, 1988.
Lajos, J., (2006): Energy processes and power plants. ETF Osijek, Osijek.
Udovićić, B. (1993): Energy. School book. It's Zagreb.
Kalea, M. (2006): Unconventional energy sources, ETF Osijek, Osijek.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual and illustrative-demonstrative. Lectures, exercises and consultations, independent and group work on the study of relevant sources; and presenting seminar exercises.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20	.....	

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Master's studies**
Case name:	**BIOTECHNOLOGY IN THE BREEDING OF WOODEN SPECIES**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**8**

Condition:
Fulfilment of pre-exam obligations (30 points).

Subject objective:
Introducing students tobiotechnology's reproduction of tree species for the purposes of refinement and plantation forestry programs. .

Outcome of the case:
The student will be trained to produce forest reproductive material through macropropagation and micropropagation methods.

Subject contents:
An initiation into tree reproduction biotechnology. Totypotenticity and cell cycle. Production of clone reproductive material. Mass vegetative reproduction. Micropropagation and in vitro reproduction. Somatic embryogenesis. Production of artificial seeds. Production of seedlings from protoplast. Rejuvenation. Mycory symbiosis.

Literature:
Calle, F. R., P. de Groot, S. L. (2007): Bioenergy for a sustainable environment, The Biomass Assessment Handbook, Hemstock, J. Woods, EARTHSCAN, UK.
Raven P.H. et Johnson G.B. (1999) Biology, WCBC McGraw-Hill, Boston.
Taiz L. et Zeiger E. (2002) Plant physiology, Sinauer Associates, Sunderland.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual and illustrative-demonstrative. Lectures, exercises and consultations, independent and group work on the study of relevant sources; and presenting seminar exercises.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20	.....	

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Master's studies**
Case name:	**INDUSTRIAL PRODUCTION OF MEDICINAL PLANTS**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**8**

Condition:
Fulfilment of pre-exam obligations (30 points).

Subject objective:
Introducing students to the importance, way and technologies of the production of forest and medicinal herbs.

Outcome of the case:
The student will be trained to practically apply knowledge of new trends and technologies in industrial production of medicinal herbs.

Subject contents:
The importance of modern production of Industian medicinal herbs in the world and with us. Natural habitat conditions for plantation production. Yields and effects. Methods of production by generative means from seeds (collection, sowing, stratification methods); vegetative pathway (from rhizomes, moles, tableons, bulbs, root sharing, tissue culture). Production technology: outdoor growing, in plastics, in containers. Land processing. Care, treatment, prevention. Care (picking, filling empty places, dusting, dug, thinning). Prevention (protection against diseases and pests). Pouring (drop per drop, surface pouring, spraying via spray, etc.). Storage: a) organic fertilisers (stand, compost, peat, green fertilizer and hummus); b) mineral fertilisers (nipple, phosphorus, potassium and calcium). New trends in production. Use of polymer-organic origin. .

Literature:
McVicar, J., (2006): Medicinal and herbs, Naklada Ulix, Rijeka.
Schaffner, W., and sar., (1999): Medicinal herbs: Kompendius, Leo commerce, Rijeka.
Kisgeci, J., (2008): Medicinal and aromatic plants, Micro Book, Serbian Literary Cooperative, Belgrade.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual and illustrative-demonstrative. Lectures, exercises and consultations, independent and group work on the study of relevant sources; and presenting seminar exercises.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20	.....	

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Master's studies**
Casename:	**AFFORESTATION FOR SPECIAL PURPOSES**
Teacher (surname, sr. letter, name):	
Casestatus:	**IP**
ESPBnumber:	**8**

Condition:
Fulfilment of pre-exam obligations (30 points).

Subject objective:
Education of students for planning, implementation and control of afforestation for special purposes (firehouses, naked, surface exploitation, sands, barren sites, landfills, compact land). Acquiring the necessary knowledge for afforestation planning in line with climate change.

Outcome of the case:
The student will be trained in planning, implementing and controlling the success of afforestation for special purposes and in line with climate change.

Subject contents:
An initiation of afforestation techniques. Foresting of firehouses – planning, implementing and controlling success. Afforestation tickles – planning, implementing and controlling success. Afforestation after surface exploitation – planning, implementation and success control. Deforestation of landfills and barrens – planning, implementation and control of success. Afforestation of compact land – planning, implementation and control of success. Afforestation of sands – planning, implementation and control of success. Establishment of polio seat belts. Establishment of anti-erosion forest belts. Afforestation in accordance with climate change – adaptation of natural populations and artificial selections and selection and production of planting material.

Literature:
Kimmins, J.P., (2004): Forest Ecology. Prentice Hall, New Jesey.
Davis, L.S. and Johnson, K.N., (1987): Forest Management, McGraw-Hill Book Company, New York.
Jović, N., Tomic, Z., Burlica, C., Jovanovic, B., Jović, D., Grbić, P., Jović, P., Jovković, R. (1998): Ecological basics for afforestation of unprocessed forest areas of Central Serbia, Monograph, Center for Multidisciplinary Studies, Faculty of Forestry, Belgrade.
Ranković, N., Ratknić, M. (1993): Assessment of the viability of investment sourcing forest cultures, Forestry 6, Belgrade.
Stamenković, V., Ratknić, M. (1995): Dependence on thickgrowth and vitality of forest trees from climate factors, Proceedings 38-39, Forestry Institute, Belgrade.

Number of **active classes**				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual and illustrative-demonstrable. Lectures , exercises and consultations, independent and group work on the study of relevant sources; drafting and presenting seminar exercises.

Knowledge score **(maximum number of points 100)**

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquium-and	20	.....	

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Master's studies**
Case name:	**PLANNING OF BOSSING IN HUNTING GROUNDS**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**8**

Condition:
Fulfilment of pre-exam obligations (30 points).

Subject objective:
Introducing students to planning and landlording in hunting grounds and certain dedicated wholes within forest areas (breeding centres – game farms). .

Outcome of the case:
The student will be trained to successfully develop and realize hunting landscaping plans (hunting bases, hunting development and intensive game-raising programs, and annual hunting plans)..

Subject contents:
The need and importance of complex planning of bossing with the potential of hunting areas; General characteristics and specificities of landlording with natural resources; Similarities and differences of planning in forestry, agriculture and hunting (classical and modern settings and solutions); Biological and environmental basics of planning the raising, protection and rational use of hunting fauna; Legal and regulatory basics of hunting planning; Organisation of hunting grounds (hunting grounds entities, number and structure of hunting grounds); Planning and training of hunting personnel; Setting the objectives of hunting grounds (general and specific); Measures and means to achieve the planned objectives of hunting landlords; Types of hunting landfill plans and programmes with regard to the maternity, planning facility and purpose of the planning document; Stages of work in the drafting of hunting landscaping plans and programmes; Landscaping (spatial and functional, types of hunting facilities and their construction); Revision of plans and programmes (planned and emergency audits, and hunting records).

Literature:
Williams, B.K., Nichols, J.D., Conroy, M.J. (2001): Analysis and Management of Animal Population. Modeling, estimating and decision making. Academic Press.
Elton,C., (1968): Animal Ecology. Methuen and Co. LTD and Science Paperbacks. London.
Wiej, G.B, (1997): Anlage und Pflege von Wildäsungsflächen. Nimrod – Verlag, Suderburg.
Bolton, M., (1997): Conservation and the use of wildlife resources. Chapman and Hall. London.
Garms, H., Borm, L., (1981): Fauna Europe. Youth book. Ljubljana.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual and illustrative-demonstrative. Lectures, exercises and consultations, independent and group work on the study of relevant sources; and presenting seminar exercises.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20	.....	

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Master's studies**
Case name:	**MASTER'S WORK**
Teacher or teachers (surname, middle letter name)**:**	
Case status	**O**
ESPB number:	**10**
Condition:	

Object Target

Public oral or multimedia presentation of knowledge and systematic understanding of the selected and written theme of master's work; the ability to independently and argumentate theapplied methodology and results of original scientific research in the field of science by applying literary language; givingconcise, clear and argumentative answers to all questions asked by members of the commission for the defence of master 's work.

Outcome of the case

The ability to achieve scientific research results and confirmationand knowledge and systematic understanding of the selected topic of master 's work; the ability to independently and argumentally explain theapplied methodology and research results; to give concise, clear and argumentative answers to all questions asked by members of the Commission for the Defence of Master 's Work.

Subject contents

The completion of the master's paper is followed by a public defence of master's work,after submitting in agreement with the mentor a master 's paper nto theadvocating scientific council of thedepartment,which proposes to the Commission for the Evaluation and Defence of master's work of at least 3 members with the University 'senata.

The Commission stipulates the assessment report to the Teaching and Scientific Council considered and forwarded to the University Senate for adoption. Positive, and adopted by the University Senate, a report on the assessment of master 's work is submitted to the Commission , which , together with the mentor and candidate , schedules an term of oral defence of master 's work. The oral defence of master 's work first exposes a short exposé about its thesis, the results of its research and contribution to work, and thenanswers questions asked to it by commission members. The defence is considered complete when all commission members exhaust the envisaged questions and the magistrate to answer them. After the Commission's withdrawal and the drafting of the defence minutes, the Commission shall announce the result of the defence. The defense record is forwarded to the University administration.

Recommended literature

In line with the problem and chronological framework of the master's theme and the established research methodology

Number of active classes	Class:	Study research work: 8 x 15 = 120

Teaching methods

Public oral defence, the use of multimedia methods in presenting independent original results of scientific research on the topic of master 's work.

Knowledge score (maximum number of points 10)

Defence of master's work: 10 points

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Doctoral studies**
Case name:	**METHODOLOGY OF SCIENTIFIC RESEARCH WORK**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**8**

Condition:
Seminar work done and defended

Object Target
Getting acquainted with the methods of scientific research work and applying them in the handling of different research subjects.

Outcome of the case
Training for independent planning, conception and performance of scientific research projects

Subject contents
Principles of scientific research work. Methods of scientific research. Study and display literature. Select an area and define a theme and goal of research. Planning, methodology and performance of research experiments. Experiment tracking. Collect, analyze, and display experimental data. Processing the results of the research. Principles of writing scientific work. Types, classification and evaluation of scientific works. Criteria for evaluating a scientist. Writing and elements of doctoral dissertation. Technical presentations. Reviews of scientific papers. Scientific research projects. Ways to formulate and align research work with current trends and reference centres. Data storage and intellectual property. Collecting, recording and quoting scientific literature. Classifications of scientific papers. Demonstration of selected techniques for collecting and analysing samples. Simulation of planning, setting up and building projects. Processing, displaying, and presenting data and results. Study research work, drawing up seminar papers for the projects.

Recommended literature
1. V. Sotirović, B. Egić, I. Tasic : Methodology of Scientific Research, Novi Pazar 2008.
2. Sotirović-Adamovic: Methodology of scientific research work, University of Novi Sad, Technical Faculty Mihajlo Pupin, Zrenjanin 2002.
3. Sotirović-Adamovic: Methodology of scientific research work with EXCEL statistics, University of Novi Sad, Technical Faculty Mihajlo Pupin, Zrenjanin 2005.
4. S. Borojevic: Methodology of expansional scientific work, Radnićki University Radivoj Cirpanov, Novi Sada 1978.
5.M. Sarić: General Principles of Scientific Work, Scientific Book Belgrade 1985

Number of active classes 4 + 2 (90)	Class: 4 x 15 = 60	Study research work: 30

Teaching methods
Verbal-text method, illustrative-demonstrative method, cyber/problem method.

Knowledge score (maximum number of points 100)

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Doctoral studies**
Case name:	**KNOWLEDGE MANAGEMENT**
Teacher:	
Case status:	**O**
ESPB number:	**8**

Condition:
Pre-exam obligations fulfilled.

Subject objective:
Developing students' views on the necessity of applying knowledge management concepts to significantly improve the company's business performance, as well as skills and knowledge about how knowledge is designed, developed and implemented.

Outcome of the case:
The student's ability to, independently and teamly, participate in the drafting of the knowledge management project in the organization, use the available knowledge management tools and assess the intellectual capital of the organization.

Subject contents

Teprijska teaching:

- The concept of knowledge, different models of knowledge.
- The concept of knowledge management and knowledge management models
- Organisational aspect: organizational culture, organizational knowledge base, learning organiser.
- American, Japanese and Scandinavian "school" knowledge management
- Operational aspect knowledge management
- Integration of UZ into organisational projects, codification and personalisation
- Measuring knowledge, intangible value and intellectual capital of an organisation
- Strategic aspect of knowledge management
- Information technologies in knowledge management

Precision teaching:

- The exercises elaborate in detail individual segments with the aim of enabling students to apply adopted theoretical knowledge in the realization and resolution of practical tasks and problems through practical work on exercises.
- Remembering elements of one of the commercial software solutions in this area
- Help in the drafting and defence of seminar papers

Literature

1. Knowledge management, Savić Z., Arsenijević O., Todorović B., Klicek T., FAM 2008.
2. On the way to the age of knowledge, 1, 2, 3, 4 counseling, Zobnatica, Valdanos, N. Sad, Chambers of Works, Faculty of Management, 2003, 2004, 2005, 2006,2007.

Number of active classes				Other hours:
Lectures: 3X15=45	Exercises: 3X15=45	Other forms:	Study research work:	

Methods ofteaching:
Verbal-textual and demonstrable methods, methods of papermaking, seminar papers and projects, as well as the step-by-step method are used.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	**15**	written exam	
practical teaching	**15**	oral ispt	**30**
colloquiums	**20**	.....	
Seminar work	**20**		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Doctoral studies**
Casename:	**COMPARATIVE ANATOMY OF THE TREE**
Teacher (surname, sr. letter, name):	
Casestatus:	**IP**
ESPBnumber:	**8**

Condition:
Fulfilment of pre-exam obligations (30 points).

Subject objective:
Introducing students to macroscopic, mykorscopic and submicroscopic material of indigenous and alohton tree species.

Outcome of the case:
The student will be trained to determining wood in warehouses on the ground, industrial plants or samples submitted, as well as pro determining fossilized samples from peleontological sites, court experts, etc.

Subject contents:
The goal, significance and methods of working in the anatomy of the tree. Genesis and development of wooden plants. Cell wall. Macromolecular components and their organization in the wall (layers of cell wall and intercellular spaces); guarantors (material, shape and function); growth of the cell wall. Meristhemi (factory and permanent tissues) Material of cambial cells, cambial cell fragmentation, time of action of cambium, formation of permanent elements. Anatomical material of the quintuple tree. Anatomy of coniferous trees, torched with resin canals. Anatomy of coniferous trees, sailing with resin canals. Resin channels, the importance of resin for wood as raw material. Anatomical structure of the leavestree. Diffuse porous species with very soft wood. Anatomical material of diffusely porous species with soft and medium hard wood. Anatomical material of large ringporous species with hard wood. Basic characteristics of the structure of the exotic tree. The structure and characteristics of compression wood conifer and tensile lilies wood.

Literature:
Franjić, J., (1998): Practitioner from herb anatomy.
Thirteen, I., (1978): Herb anatomy.
Bacic, T., (2001): Morphology and anatomia of herbs. Faculty of Pedagogical Science. Josip JurStrossmayer University in Osijek, Osijek.

Number of **active classes**				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual and illustrative-demonstrable. Lectures , exercises and consultations, independent and group work on the study of relevant sources; drafting and presenting seminar exercises.

Knowledge score **(maximum number of points 100)**

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquium-and	20	.....	

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Doctoral studies**
Case name:	**MOLECULAR GENETICS OF FOREST TREES**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**8**

Condition:
Fulfilment of pre-exam obligations (30 points).

Subject objective:
Introducing students to tehniks of direct genome structure and function testing in order to assess genetic polymorphic within and between populations, provenances, lines or genotypes of forest trees.

Outcome of the case:
The student will be trained to study the genetic structure, diversity and differentiation of populations or genotypes of forest trees.

Subject contents:
Structure and function of DNA; Transmission of genetic information; Genomy-term and definition; Genetic markers: morphological, biochemical and molecular markers; Types and characteristics of molecular markers; Selection of molecular markers; Taking samples for analysis; Basic principles of electrophoresis; PCR – chain reaction of polymerase; The entry of molecular markers in modern forestry; Basics of genetic engineering

Literature:
Kajba, D., Ballian, D., (2007): Forestry genetics. University of Sarajevo. Sarajevo.
Vidaković, M., A. Krstinić (1985): Genetics and replenishment of forest trees. Liber, Zagreb.
Borojević, K. (1986): Genes and population. It's a forum. New Now.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual and illustrative-demonstrative. Lectures, exercises and consultations, independent and group work on the study of relevant sources; and presenting seminar exercises.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20	.....	

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Doctoral studies**
Case name:	**RESEARCH PAPER FOR THE SELECTION OF TOPICS AND LITERATURE EXAMINATIONS FOR DOCTORAL DISSERTATION**
Teacher (surname, sr. letter, name):	
Case status:	**O**
ESPB number:	**8**
Condition: fulfilment of pre-exam obligations (30 points)	

Object Target

Outcome of the case
Selection of a methodical field, i.e. the methodology of teaching a particular teaching subject or educational field and preparing a thematic framework for the production of doctoral dissertation and specifications of the thematic area and concrete research tasks on doctoral dissertation. .

Subject contents

Study research work
The contents of the case are determined by the methodological area to which the theme of doctoral dissertation is provided, as well as the concrete paradigmatic possibilities that open up in the research field of the theme of dissertation.

Literature
The PhD student in cooperation with the mentor selects the literature provided for the profiling of the concept of the topic for doctoral dissertation, from the appropriate methodical field, as well as literature that directly covers the selected topic.

Number of active classes				Other hours:
Class:	Exercises:	Other forms:	Study research work:	4X50

Methods of teaching:

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	15	written exam	
practical teaching	15	**oral exam**	30
seminar work	20		
colloquium	20		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Doctoral studies**
Case name:	**DEDICATED PRODUCTION OF FOREST REPRODUCTIVE MATERIAL**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**8**

Condition:
Fulfilment of pre-exam obligations (30 points).

Subject objective:
Familiarisation of students with the procedures for the production of dedicated forest reproductive material, namely seeds (in categories of qualified and tested – varietal reproductive material) and dedicated (target) seedlings for the purposes of plantation forestry and afforestation programmes for special purposes.

Outcome of the case:
The student will be trained to organize and implement seed production in seed plantations and through controlled pollination. Ability to produce clone reproductive material. Training for defining and producing dedicated planting matter (target seedlings)..

Subject contents:
Production of qualified reproductive material. Production of tested (sort) reproductive material. Production of seeds from controlled pollination. Establishment and bossing of seed plantations. Production of clone reproductive material. Define the target seeding. Genetic aspects of the target seedling. Picking a planting type. Combined seeding types. Choice of substrate and garbage regime. Irrigation regime. Pruning and trimming. Morphological quality parameters. Physiological quality parameters. Success parameters. Allometric relationships. Determining the right time to extract seedlings. Classification, packaging and storage of seedlings. Handshake and send.

Literature:
Gurda, S., (2002): Forestry products. Forestry college. University of Sarajevo. Sarajevo.
Višnjić, Ć., and sar., (2002): Ecological breeding characteristics of beech panthers in Bosnia and Herzegovina. Forestry college. University of Sarajevo. Sarajevo.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual and illustrative-demonstrative. Lectures, exercises and consultations, independent and group work on the study of relevant sources; and presenting seminar exercises.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20	.....	

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Doctoral studies**
Case name:	**PLANTATION PRODUCTION OF MEDICINAL, AROMATIC AND SPICE PLANTS**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**8**

Condition:
Fulfilment of pre-exam obligations (30 points).

Subject objective:
Introducing students with the importance of modern plantation production of medicinal, aromatic and spice herbs. .

Outcome of the case:
The student will be trained to practically apply knowledge of plantation production of medicinal, aromatic and herbs.

Subject contents:
Trends of interest in medicinal, aromatic and spice herbs. Characteristics of medicinal, spice and aromatic herbs in plantation production. The importance of modern production of medicinal, spice and aromatic herbs. Extracts, parts of the healing plant. It's aromatics. Natural conditions for plantation production. Compatibility of species in relation to objective circumstances of the space where the plantation is raised. Production technology. Care, treatment, prevention. Yield related to the age of the plant (two years, three years, etc.) per ha. Placement: as a semi-product, as an entire technological roundabout from picking to end product (ethereal oils, dried drugs). Stages of development and harvesting. Use, processing, anduse.

Literature:
Viovilović, I., (2014): Production and processing of medicinal and aromatic herbs. Lifelong learning facility of the Magistrate. Pula.
Tucakov, J., (1954): Medicinal herbs in the area of Timoko. Cooperative book. Belgrade.
Lange, D., Schippmann, U., (1997): Trade Survey of Medical Plants in Germany. A Contribution to International Plant Specification Conservation. Bundesamt für Naturschutz. It's Bonn.
Laird, S.A., (1999): The botany medicine industry. In The commercial use of biodiversity: access to genetic resources and benefit-sharing. Earthscan, London.
Adossides, A., (2003): Strategie et politique agricole. La filière "Plantes Aromatiques & Medicineles". It's a fao. Project Assistance.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual and illustrative-demonstrative. Lectures, exercises and consultations, independent and group work on the study of relevant sources; and presenting seminar exercises.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20	.....	

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Doctoral studies**
Case name:	**ORGANISATION, CONSTRUCTION TECHNOLOGY AND MANAGEMENT OF CONSTRUCTION OF BUILDINGS IN FORESTRY**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**8**

Condition:
Fulfilment of pre-exam obligations (30 points).

Subject objective:
Getting to know students in the field of organization, construction technology and management of the construction of all kinds of low-rise buildings in forestry.

Outcome of the case:
The student will be trained to create projects, organize and technology to build forest roads and buildings on them, as well as to manage the construction of low-rise buildings in forestry.

Subject contents:
Basic terms about planning and management. Study of the technological process by the method of the diagram of the progress and by process map method. Examples of derived objects. Planning and management of construction of buildings in forestry. Static and dynamic plans. Numeric, orthogonal and cyclogram dynamic plans. Parallel dynamic plan of progression of works, with accompanying elements. Inclusion of the workforce, mechanization, materials and financial resources. Initiating dynamic network planning. Structure analysis. Technological dependence on activity. Activity relationship scheme. Forming a network dynamic plan. Analysis of time when network dynamic planning. Critical activities and critical path. Optimal time of construction of buildings in forestry. Cost analysis in network dynamic planning. Optimize your network plan.

Literature:
Pichman,D., (2007): Forest Roads. University of Zagreb. It's Zagreb.
Knuchel, H., (1953): Planning and control in the management forest. T. And A. Constable LTD. Edinburgh.
Klepac, D., (1965): Forest editing. Knowledge. Zagreb.
Cavlović, I., (2013): Basics of forest editing. University of Zagreb. It's Zagreb.
Davis, L.S. and Johnson, K.N., (1987): Forest Management, McGraw-Hill Book Company, New York.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual and illustrative-demonstrative. Lectures, exercises and consultations, independent and group work on the study of relevant sources; and presenting seminar exercises.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20	.....	

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Doctoral studies**
Case name:	**DEGRADATION, PROTECTION, USE AND MELIORATION OF LAND**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**8**

Condition:
Fulfilment of pre-exam obligations (30 points).

Subject objective:
Introducing students to land as a natural resource, analysing the process of degradation of global and local character and looking at possible solutions to protection, revitalization, revitalization and remediation of land.

Outcome of the case:
The student will be trained to plan and perform experimental research on scientific grounds and critical analysis and interpretation of analytical results and their presentation through oral presentation and written report..

Subject contents:
as a natural resource. Land functions. Definition of land degradation. The causes of degradation. Types of degradation. Sensitivity and resilience of the earth. Characteristics that affect sensitivity and resilience. Physical degradation and taking of land mass – erosion. Degradation with in-situ damage. Sources and types of pollutants Degradation of physical and chemical properties as a result of natural and anthropogenic influences. The impact of economic activities and technological development on land damage processes. Legislation and directives to prevent land degradation. Land protection measures. Remediation and reculption of contaminated and degraded land.

Literature:
Sokolović, J., Bajrić, M., (2013): Opening forests. Forestry college. University of Sarajevo. Sarajevo.
Spaniard,Z., (2005): Meliorations of the rubble. Forestry college. University of Zagreb. It's Zagreb.
Davis, L.S. and Johnson, K.N., (1987): Forest Management, McGraw-Hill Book Company, New York.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual and illustrative-demonstrative. Lectures, exercises and consultations, independent and group work on the study of relevant sources; and presenting seminar exercises.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20	.....	

Study program / study programs:	**Forestry**	
Type and cycle of studies:	**Doctoral studies**	
Case name:	**PRODUCTION AND PUBLICATION OF THE FIRST SCIENTIFIC WORK**	
Teacher:		
Case status:	**O**	
ESPB number:	**7**	
Condition:		
Object Target Training for independent scientific and research and authorwork.		
Outcome of the case Publishing crafted scientific work in publications or magazines of the appropriate scientific rank. .		
Subject contents Study research work Selection of the appropriate research topic, studying relevant literature and creating scientific work itself.		
Recommended literature Selected relevant literature that absorbs the research task on which scientific work is constructed.		
Number of active classes	Class:	Study research work: 6 x 15 = 90
Teaching methods Scientific and research methods depending on the field of scientific work.		
Knowledge score (maximum number of points 100)		

Study program / study programs:	**Forestry**	
Type and cycle of studies:	**Doctoral studies**	
Case name:	**RESEARCH TOPIC 1**	
Teacher:		
Case status:	**O**	
ESPB number:	**8**	
Condition: no		
Object Target The basic research work of phD students on the conception of the basic structure of doctoral dissertation, on profiling of special sections and thematic wholes of dissertation, as well as writing individual texts from the thematic dissertation tasks set.		
Outcome of the case Identification of the basic structure of doctoral dissertation, its internal organisation in specific research areas and thematic tasks. .		
Subject contents Study research work Elaboration of the basic research idea of doctoral dissertation. Parsing the research idea on special research themes. Parsing research themes into specific textual wholes.		
Recommended literature In accordance with the established general list of literature established for the whole of doctoral dissertation, literature selection is carried out according to concrete research tasks		
Number of active classes	Class:	Study research work: 6 x 15 = 90
Teaching methods Scientific research methods depending on the field of doctoral dissertation.		
Knowledge score (maximum number of points 100)		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Doctoral studies**
Case name:	**CHANGE MANAGERS**
Teacher:	
Case status:	**O**
ESPB number:	**8**

Condition:
Pre-exam obligations fulfilled.

Subject objective:
And Make students aware of the importance of change and development in modern organizations
II Meet students with as many different perspectives of organizational changes as possible so that they can understand their multidimensional character and be able to implement in practice that approach to change that best suits a given situation
III Transfer knowledge of the causes, content and course of the organizational change process so that students can fully understand them when they meet in practice
IV Transfer sufficient practical knowledge on how to manage the process of organizational changes so that students are able to successfully manage this process in practice

Outcome of the case:
Gaining competences to understand the course of organisational changes and events therein ;
Gaining competences to understand the causes and nature of organisational changes – why changes are happening;
Gaining competences to lead the organizational change process – taking steps that lead to the successful realisation of the objectives of change

Subject contents
Theoretical teaching:
1. Processes and phenomena in civilizational periods
2. Context of change
3. Change management
4. Resistance to change
6. Understanding changes
7. Reshaping the organisation
8. Knowledge management
9. Corporate culture
10. Making changes

Precision teaching:
Practical teaching – students work in small groups
1. Work on case studies on themes in theoretical teaching
2. Work on changes in organisations where students do professional practice

Literature
Syfert Z. and associates: Change Management, Faculty of Technical Sciences, Zrenjanin
Ristic, D. and Associates, (2005) *Change Management*, Cekom books,Novi Sad
supplementary
Draker, P.(1995) *Post-capitalist Society*, Grmec-Economic Review, Belgrade
Janićijević, N. (1996) *Organizational culture – collective mind of the company*, Ulixes, Novi Sad

Number of active classes				Other hours:
Lectures: 3X15=45	Exercises: 3X15=45	Other forms:	Study research work	

Methods ofteaching:
Verbal text (conversation, text work), illustratively demonstrative

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	**Final exam**	Points
activity during the lecture	**15**	written exam	
practical teaching	**15**	oral ispt	**30**
colloquiums	**20**	.....	
Seminar work	**20**		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Doctoral studies**
Case name:	**PHYTOPHARMACY**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**8**

Condition:
Fulfilment of pre-exam obligations (30 points).

Subject objective:
Introducing students to the most significant chemical agents (pesticides) used in plant protection in order to kill phytopathogenic organisms, insects, mites, nematodes, rodents, snails, weed plants and other biological agents. .

Outcome of the case:
The student will also be trainedto recommend appropriate pesticides for plant protection and training for the use of appropriate pesticide application apparatus..

Subject contents:
Damage from insects, diseases, as well as some other biotic agents, damage in the form of pigeons, defoliation, including drying of individual or groups of trees, new pesticides to combat harmful biological agents, chemical and biological measures, environmental problems in which pesticides and harmful biological agents attack plants, animals and humans, the use of pesticides in the production of quality and healthy planting material, pesticide in the protection of young plantations of soft lilies and cetinar cultures.

Literature:
Igrc-Barcic, J., Maceljski, M., (2001): Environmentally friendly protection of plants from pests. Zrinski d.d. Chakovec.
Maceljski, M., (1992): Methods and apparatus for the use of pesticides. University of Zagreb, Faculty of Agronomy, Zagreb.
You're headed. M., (2004): The PlantProtection Society inForestry. Forest Protection and Hunting Institute. It's Zagreb.
Bohmont, B.L., (1981): The New Pesticide User's Guide. B and K Enterprises, Inc., Fort Collins, Colorado.
The United York Errands.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual and illustrative-demonstrative. Lectures, exercises and consultations, independent and group work on the study of relevant sources; and presenting seminar exercises.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20	.....	

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Doctoral studies**
Case name:	**APPLIED ZOOLOGY**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**8**

Condition:
Fulfilment of pre-exam obligations (30 points).

Subject objective:
Meeting students about animals that reside in the woods.

Outcome of the case:
The student will meet individual groups of animals, their harmful representatives and in particular measures to combat them, so that they can in practice determine and use an appropriate way to combat or prevent them from acting harmfully.

Subject contents:
Harmful insects, nematodes, sofas, mites, centuries, rodents, mammals and birds

Literature:
Matonic, I., (1981): Invertebrates. It's Zagreb.
Randal, D., Burggren, W., French, K., (1998): Eckert animal physiology. Mechanisms and adaptations; W. H. Freeman and Company, NewYork.
Schwenke, W., (1981): Letfaden der Forstoologie und des Forstchutzes gegeb Tiere. Verlag Paul Parey. Hamburg undBerlin.
Matonic, I., Erben, R., (2002): General zoology. School book. It's Zagreb.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual and illustrative-demonstrative. Lectures, exercises and consultations, independent and group work on the study of relevant sources; and presenting seminar exercises.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20	.....	

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Doctoral studies**
Case name:	**INVESTMENTS IN INFRASTRUCTURE IN FORESTRY**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**8**

Condition:
Fulfilment of pre-exam obligations (30 points).

Subject objective:
Introducing students to the types and functions of investments and studying methods of assessing the profitability of investments, with an emphasis on investment investments in forestry, through a theoretical and practical approach.

Outcome of the case:
The student will also be trainedto successfully solve tasks and problems in the field of investing capital in forestry and making investment elaborates in forestry.

Subject contents:
The concept of investments and investments in forestry (concept, species, functions and economic essence of investments, investments in forestry, economic criteria for determining the volume and efficiency of investments in forestry); Financing of investments in forestry (sources of financing of investments in forestry, own resources of forestry enterprises, other people's funds that can be used by forestry enterprises, development of forms of investment in forestry of Serbia, participation of forestry investments in total investments in Serbia); Assessment of the viability of investments (assessment as a structural part of the process of investment in forestry, criteria for assessing profitability, profitability analysis – free return rate method, repayment deadline method, commercial analysis – NPV method, internal return rate method, benefit-cost ratio, liquidity analysis, assessment of justification of investments); Investment management (defining investment task, basic stage in investment, feasibility study, investment lab).

Literature:
Ranković, N. (1996): Economics of Forestry, University Textbook, Faculty of Forestry, Belgrade.
Vucicević, S. (1999): Forest and environment, University Textbook, Faculty of Forestry, Belgrade.
Stojanović, Lj., Krstić, M. (2000): Forest growing III, University Textbook, Faculty of Forestry, Belgrade.
Delić, S., (2008): Basics of forestry economics. University of Sarajevo. Sarajevo.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual and illustrative-demonstrative. Lectures, exercises and consultations, independent and group work on the study of relevant sources; and presenting seminar exercises.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20	.....	

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Doctoral studies**
Case name:	**DYNAMICS OF TREE GROWTH AND FOREST CONSISTENCIES**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**8**

Condition:
Fulfilment of pre-exam obligations (30 points).

Subject objective:
Getting to know students in the field of tree growth and forest consistencies and producing biomass from a biological, environmental and economic aspect. .

Outcome of the case:
The student will be trained in research work and the achievement of new scientific knowledge and their application. Knowledge in this area is necessary for all who deal with trees and forest consistencies as commercial facilities, as facilities for environmental protection, treatment and recreation or objects of general aesthetic and cultural importance..

Subject contents:
Characteristics of growth of tree species in natural and artificially raised consistencies depending on the consistency and habitat conditions, definition of optimal constituent condition, real and potential production, analysis of the functioning of exogenous and endogenous factors on the vitality and growth of forests, analysis of the diversity of structure and elements of the growth of consistencies, organization and systematization of knowledge and understanding of individual aspects of the legality of forest growth in order to education a comprehensive idea of the overall ecosystem and the development of sustainable forest development plans as a natural resource of special economic and environmental importance.

Literature:
Matic, S., I. Anić, M. Oršanić, (2003): Ordinary beech. Academy of Forestry Sciences. It's Zagreb.
Matic, S., Prpić, B., Anić, I., Oršanić, M., (2001): Ordinary courses. Academy of Forestry Sciences. It's Zagreb.
Lid, D., (1996): Oak alcove. HAZU and Croatian Forests p.o. Zagreb.
Matic, S., (1992): Forest cultures and plantations. Knowledge. Zagreb.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual and illustrative-demonstrative. Lectures, exercises and consultations, independent and group work on the study of relevant sources; and presenting seminar exercises.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20	.....	

Study program / study programs:	**Forestry**	
Type and cycle of studies:	**Doctoral studies**	
Case name:	**AND THEME 2**	
Teacher:		
Case status:	**O**	
ESPB number:	**9**	
Condition:		
Object Target The basic research work of the PhD in the conception of the structure of doctoral dissertation, on profiling of special sections and thematic wholes of dissertation, as well as writing individual texts from the set of thematic tasks of dissertation.		
Outcome of the case Determination of the structure of doctoral dissertation, its internal organisation in specific research areas and thematic tasks. .		
Subject contents Study research work Elaboration of the research idea of doctoral dissertation. Parsing the research idea on special research themes. Parsing research themes into specific textual wholes.		
Recommended literature In accordance with the established general list of literature established for the whole of doctoral dissertation, literature selection is carried out according to concrete research tasks		
Number of active classes	Class:	Study research work: 6 x 15 = 90
Teaching methods Scientific research methods depending on the field of doctoral dissertation.		
Knowledge score (maximum number of points 100)		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Doctoral studies**
Case name:	**MODERN TECHNOLOGIES IN INVENTORY SHuMA**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**8**

Condition:
Fulfilment of pre-exam obligations (30 points).

Subject objective:
Introducing students to state-of-the-art collection technologies (remote detection), processing, analysis, evaluation and presentation of data on forest ecosystems, and forming GIS databases as the basis for better planning, management and control in forestry.

Outcome of the case:
The student will be trained to work in practice and in scientific institutions (institutes and faculty).

Subject contents:
Collecting information about forests and other natural potentials in the space they occupy remote detection; Automatic interpretation of air and satellite images; Designing a network of suitable surfaces using GIS technology (ARC GIS software); Create simple forms (applications) designed to collect data using PDA devices; Practical application and use of existing applications for constituent forest inventory; Processing, analysis. evaluation, presenting and lagering of data(databases).

Literature:
Pranjić, A., Lukić, N., (1995): Measurement of forests. Forestry college. University of Zagreb. It's Zagreb.
Mirković, D., Banković, S., (1993): Dendrometry. Forestry college. University of Belgrade. Belgrade.
Matć, V., (1965): Method of forest inventory for large surfaces. And Part II. Forestry Institute of the Faculty of Forestry in Sarajevo. Sarajevo.
Kangas, A., Maltamo, M., (2006): Forest Inventory. Methodology and Applications. Springer. The Netherlands.
Shiver, B.D., Borders, B.E., (1996): Sampling techniques for forest resource inventory. John Wiley & Sons. New York, Chichester, Brisbane, Toronto, Singapore.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual and illustrative-demonstrative. Lectures, exercises and consultations, independent and group work on the study of relevant sources; and presenting seminar exercises.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20	.....	

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Doctoral studies**
Case name:	**USE OF FOREST UNDER SPECIAL PROTECTION REGIME**
Teacher (surname, sr. letter, name):	
Case status:	**IP**
ESPB number:	**8**

Condition:
Fulfilment of pre-exam obligations (30 points).

Subject objective:
Meeting students from the field cut and create as well as transport of wood varieties under the conditions of special forest protection regimes and appropriate measures in the field of use of these forest complexes. .

Outcome of the case:
The student will also be trainedto dealwithsolving problems related to the selection ofoptimal technologies in areas that want certain treatment from their protection..

Subject contents:
Rusts of forest protection. FSC standards. Environmental and ergonomatic characteristics of the means of work in forest use jobs. Constructive and exploitative characteristics of labour resources and their importance for the emission of harmful gases as well as the impact on land. Use of special fuels to reduce emissions of harmful gaoves. Biodegradable propulsion fuels and oils. The load-bearing of the forest soil. Trampling forest soil with different machines. Compression and erosion of the soil, as a result of the movement of the means of work and cargo when towing and driving. It's a colossus. Transfer of force from wheels to the base. Wheel indices and contact pressure. Possibilities for reducing the contact pressure of vehicles on forest soil. Methods of measuring soil compression and its assessment. Damage to deeper trees, rejuvenating and root systems when moving the visor. Tree protection when attracting wood varieties. Technical and constructive characteristics of means of working on steep terrains and low load-bearing terrains. Transport of wood wired with rope systems, pourers, animal clamping. Classification of forest cable cars. Technical characteristics of forest cable car. Planning a corridor of forest cable cars in protected areas. Normizing work on the jobs of transporting wood by cable car. Calculations of work on wire transport jobs. The effectiveness of transporting wood to forest cable cars in areas under specific protection regimes. Damage to the remaining trees, land and rejuvenation caused by the transport of wood by cable car. Planning travel infrastructure in forests with a special protection regime. Construction of travel infrastructure in forests with a special protection regime. Choice of forest exploitation technologies, given the damage in the land as well as the reduction of CO2 emissions. Transport of the tree with an animal cart with special review of the occurrence of damage. Torture capabilities of the animal cartridge.

Literature:
Vajda, Z., (1973) Forest protection science, school book. It's Zagreb.
Martinić, I., (2009): Management of protected areas of nature: Planning, development and sustainability. University of Zagreb. Forestry college. It's Zagreb.
Altenkirsh, W., Mayunke, C., Ohnesorge, B., (2002) Waldschutz auf ökologischer Grundlage. Eugen Ulmer Verlag. It's Stuttgart.
Pullin, A.S., (2002): Conservation biology. Cambridge University Press. Cambridge.

Number of active classes				Other hours:
Lectures: 2	Exercises: 2	Other forms:	Study research work:	

Methods of teaching:
Verbal-textual and illustrative-demonstrative. Lectures, exercises and consultations, independent and group work on the study of relevant sources; and presenting seminar exercises.

Knowledge score (maximum number of points 100)

Pre-exam obligations	Points	Final exam	Points
activity during the lecture	15	written exam	
practical teaching	15	oral exam	30
seminar work	20		
colloquiums	20	.....	

Study program / study programs:	**Forestry**	
Type and cycle of studies:	**Doctoral studies**	
Case name:	**PRODUCTION AND PUBLICATION OF OTHER SCIENTIFIC WORK**	
Teacher:		
Case status:	**O**	
ESPB number:	**8**	
Condition: no		
Object Target Training for independent scientific and research and authorwork.		
Outcome of the case Publishing crafted scientific work in publications or magazines of the appropriate scientific rank. .		
Subject contents Study research work. Selection of the appropriate research topic, studying relevant literature and creating scientific work itself.		
Recommended literature Selected relevant literature that absorbs the research task on which scientific work is constructed.		
Number of active classes	Class:	Study research work: 6 x 15 = 90
Teaching methods Scientific and research methods depending on the field of scientific work.		
Knowledge score (maximum number of points 100)		

Study program / study programs:	**Forestry**	
Type and cycle of studies:	**Doctoral studies**	
Subject	**DOCTORAL DISSERTATION – RESEARCH ON TOPIC 3**	
Teacher or teachers (surname, middle letter name)**:**		
Case status:	**O**	
ESPB number:	**14**	
Condition:		
Object Target The basic research work of the PhD in the conception of the structure of doctoral dissertation, on profiling of special sections and thematic wholes of dissertation, as well as writing individual texts from the set of thematic tasks of dissertation.		
Outcome of the case Determination of the structure of doctoral dissertation, its internal organisation in specific research areas and thematic tasks. .		
Subject contents Study research work Elaboration of the research idea of doctoral dissertation. Parsing the research idea on special research themes. Parsing research themes into specific textual wholes.		
Recommended literature In accordance with the established general list of literature established for the whole of doctoral dissertation, literature selection is carried out according to concrete research tasks		
Number of active classes	Class:	Study research work: 10 x 15 = 150
Teaching methods Scientific research methods depending on the field of doctoral dissertation.		
Knowledge score (maximum number of points 100)		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Doctoral studies**
Case name:	**DOCTORAL DISSERTATION – RESEARCH ON TOPIC 4**
Teacher or teachers (surname, middle letter name)**:**	
Case status:	**O**
ESPB number:	**14**
Condition:	

Object Target
The basic research work of the PhD in the conception of the structure of doctoral dissertation, on profiling of special sections and thematic wholes of dissertation, as well as writing individual texts from the set of thematic tasks of dissertation.

Outcome of the case
Determination of the structure of doctoral dissertation, its internal organisation in specific research areas and thematic tasks. .

Subject contents

Study research work
Elaboration of the research idea of doctoral dissertation. Parsing the research idea on special research themes. Parsing research themes into specific textual wholes.

Recommended literature
In accordance with the established general list of literature established for the whole of doctoral dissertation, literature selection is carried out according to concrete research tasks

Number of active classes	Class:	Study research work: 10 x 15 = 150

Teaching methods
Scientific research methods depending on the field of doctoral dissertation.

Knowledge score (maximum number of points 100)

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Doctoral studies**
Case name:	**WRITING DOCTORAL DISSERTATION (PROCESSING OF DOCTORAL DISSERTATION DATA)**
Teacher or teachers (surname, middle letter name)**:**	
Case status:	**O**
ESPB number:	**14**
Condition:	

Object Target

By applying basic, theoretically methodological, scientific and professional-applied knowledge, methods and latest knowledge from recent relevant scientific and professional literature (monographs and periodics) a PhD student approaches to solving concrete problems within the topic of doctoral dissertation aimed at writing and defending final work.

Outcome of the case

Confirmed ability of phD students to, by applying the appropriate methodology, independent ly linking and applying acquired knowledge from doctoral studies and adopting new ones from the field from which the candidata reported doctoral dissertation , as well as the ability to use relevant literature independently, in particular recent, application of scientific methodology, systematic analysis and implementation of relevant conclusions, announce the results of its research in the framework of the topic of doctoral dissertation, explain their importance for further scientific research in a particular area and contribution to science.

Subject contents

The content or structure of doctoral dissertation was formed individually in accordance with the topic and needs of the work. The PhD studied professional and theoretical literature, analyzed the subject of his doctoral dissertation in order to find a solution to a specific task set by his mentor and approached the writing of the final work. Theoretical basics are a condition for successful work on writing doctoral dissertation.

Writing dissertation: Mentor, along with his PhD, ceded the silabus of the work of doctoral dissertation, which the PhD accepted and applied in his work to write dissertation. Doctoral dissertation is required to be written in the framework of a set and approved topic that has previously defined objectives and objectives, and reasoned, and reasoned, by the Commission for the assessment of the eligibility of the topic, candidates and mentors assessed by the proposal for the topic of doctoral dissertation certified by the University Senate.

A positively evaluated proposal of the topic of doctoral dissertation, the PhD student is entitled to approach the writing of doctoral dissertation.

In writing doctoral dissertation, the PhD is used by the relevant literature proposed by the mentor or literature he himself proposed and analyzed together with the mentor. During the development of doctoral dissertation, the PhD is consulted with a mentor who can also give additional instructions to the PhD, refer to additional and new literature and direct him in a direction that will lead to the development of quality doctoral dissertation.

Depending on the topic and requirements resulting from the task of writing doctoral thesis, the PhD, before accessing the writing of the text of doctoral dissertation, performs certain (field, archival, etc.) research, surveys, tests, statistical data processing and other research whose results are incorporated into the text part of the thesis. The PhD student consults other teachers in the narrower field of the theme of dissertation himself, in addition to regular consultations with the mentor, if necessary. Before submitting the final version of the doctoral dissertation, the PhD student is obliged to pass all the exams provided for in the doctoral studies program.

Recommended literature

In accordance with the established general list of literature established for the whole of doctoral dissertation, literature selection is carried out according to concrete research tasks

Number of active classes	Class:	Study research work: 10 x 15 = 150

Teaching methods

Scientific research methods depending on the field of doctoral dissertation.

Knowledge score (maximum number of points 100)

Study program / study programs:	**Forestry**	
Type and cycle of studies:	**Doctoral studies**	
Case name:	**PRODUCTION AND PUBLICATION OF THIRD SCIENTIFIC WORK**	
Teacher or teachers (surname, middle letter name)**:**		
Case status:	**O**	
ESPB number:	**12**	
Condition:		
Object Target Training for independent scientific and research and authorwork.		
Outcome of the case Publishing crafted scientific work in publications or magazines of the appropriate scientific rank that require reviewed work.		
Subject contents Study research work Selection of the appropriate research topic, studying relevant literature and creating scientific work itself.		
Recommended literature Selected relevant literature that absorbs the research task on which scientific work is constructed.		
Number of active classes	Class:	Study research work: 6 x 15 = 90
Teaching methods Scientific and research methods depending on the field of scientific work.		
Knowledge score (maximum number of points 100)		

Study program / study programs:	**Forestry**	
Type and cycle of studies:	**Doctoral studies**	
Case name:	**DOCTORAL DISSERTATION – RESEARCH ON TOPIC 5**	
Teacher or teachers (surname, middle letter name)**:**		
Case status:	**O**	
ESPB number:	**12**	
Condition:		
Object Target The basic research work of the PhD on the finishing and alteration of the written structure of doctoral dissertation, on profiling of special sections and thematic wholes of dissertation, as well as writing individual texts from the set of thematic tasks of dissertation.		
Outcome of the case Auditing the structure of the doctoral dissertation, its internal organisation to specific research areas and thematic tasks. .		
Subject contents Study research work Elaboration of the research idea of doctoral dissertation. Parsing the research idea on special research themes. Parsing research themes into specific textual wholes. The latest revision of the written doctoral thesis proposal before the final form.		
Recommended literature In accordance with the established general list of literature established for the whole of doctoral dissertation, literature selection is carried out according to concrete research tasks		
Number of active classes	Class:	Study research work: 6 x 15 = 90
Teaching methods Scientific research methods depending on the field of doctoral dissertation.		
Knowledge score (maximum number of points 100)		

Study program / study programs:	**Forestry**
Type and cycle of studies:	**Doctoral studies**
Case name:	**DEFENSE OF DOCTORAL DISSERTATION**
Teacher or teachers (surname, middle letter name)**:**	
Case status	**O**
ESPB number:	**11**
Condition:	

Object Target

Public oral or multimedia presentation of the PhD and systematic understanding of the selected and written theme of doctoral dissertation; the ability to explain the applied methodology and results of original scientific research in the field of science by applying literary language with the necessary degree of academic integrity; giving concise, clear and argumentative answers to all questions asked by members of the Commission for the Defence of Doctoral Dissertation.

Outcome of the case

The ability to achieve scientific research results by original research extending the boundaries of knowledge so far in the field of ignorance. Public confirmation of doctoral knowledge and systematic understanding of the selected topic of doctoral dissertation; the ability to explain independently and argumentatively the applied methodology and results of original scientific research in the field of science with the necessary degree of academic integrity; giving concise, clear and argumentative answers to all questions asked by members of the Commission for the Defence of Doctoral Dissertation. .

Subject contents

Public defense of doctoral dissertation in accordance with the Doctoral Studies Regulations.
After completing the writing of the doctoral thesis, and in agreement with the mentor, The PhDt t hands over at least 8 copies of the thesis to the Teaching and Scientific Council of the Department, which proposes to the Senate of the University the Commission for the Assessment and Defence of doctoral dispersal of at least 3 members.
The Commission shall submit a (positive) assessment report to the Teaching and Scientific Council considered and forwarded to the University Senate for adoption. Positive, and adopted by the University Senate, a report on the assessment of doctoral dissertation is submitted to the Commission, which, together with the mentor and candidate, schedules an oral defence of doctoral dissertation. On the oral defence of doctoral dissertation, doctoralt first exhibits a short exposé about its thesis, the results of its research and the contribution of its dissertation of the area from which the thesis is written, and then answers the questions asked to it by the members of the Commission. Defence shall be considered complete when all Members of the Commission exhaust the envisaged questions and doctoralt on them to answer the satispensing answers. Following the Commission's withdrawal and the drawing up of defence minutes,the Commissionshall announce the result of the defence. The defense record is forwarded to the University administration.

Recommended literature

In line with the problem and chronological framework of the topic of doctoral dissertation and the established research methodology

Number of active classes	Class:	Study research work: 8 x 15 = 120

Teaching methods

Public oral defence, the use of multimedia methods in presenting independent original results of scientific research on the topic of doctoral dissertation.

Knowledge score (maximum number of points 100)

Defence of doctoral dissertation: 100 points