



SVEUČILIŠTE U ZAGREBU, FAKULTET ŠUMARSTVA I DRVNE TEHNOLOGIJE

UNIVERSITY OF ZAGREB, FACULTY OF FORESTRY AND WOOD TECHNOLOGY

Graduate university study: Urban Forestry, Nature Conservation and Environmental Protection

Evaluation methods and criteria

Acad. year 2022/23.



Learning outcomes of the study program: Graduate university study Urban Forestry, Nature Conservation and Environmental Protection

A - general engineering competences

- A1. independently gather data, statistically process, present and analyse data, discuss and conclude based on analysed data and distinguish possibilities of different interpretation of the same problem analysed in different ways
- A2. explain position and trends of urban forestry, nature conservation and environmental protection in the country and worldwide
- A3. apply simpler methods of operation research

B - focused engineering competences

- B1. organise and perform the most complex jobs all forms of organizing the protection of nature areas and the most complex forestry works in urban areas
- B2. manage and make independent professional (business) decisions form the field of urban forestry, nature conservation and environmental protection
- B3. establish and implement programs for the management of forest ecosystems in protected natural areas as well as management programs in specific urban forest ecosystems
- B4. organise and manage professional works on improvement of degraded habitats
- B5. apply knowledge related to horticultural dendrology and recommend and choose tree species in urban areas
- B6. organise and manage professional works on the production of decorative plants
- B7. organise and manage professional works on the soil and water management and protection
- B8. organise and manage wildlife management in protected natural areas
- B9. organise and manage integrated protection of plants and trees in urban areas and protected natural areas
- B10. prepare ecological studies and forestry parts of spatial plans
- B11. apply knowledge related to ecologically friendly techniques and technologies of forestry works used in urban areas and protected natural areas
- B12. manage forest, human resource, and technical potential during performance of forest works in urban areas and protected natural areas
- B13. conduct ecological monitoring, area analysis and spatial evaluation as well as design of park areas
- B14. develop current technologies as well as implement new technologies

C - organizational engineering competences

- C1. manage most complex tasks in all forms of organizing the protection of nature areas; national, county, and municipal administration, including advisory services and inspection supervision
- C2. perform and manage works in horticultural and communal services
- C3. perform jobs of professional manager and supervisor in environment and nature protection areas

D - developing engineering competences

- D1. conduct businesses of scientific and professional associate in scientific-research institutions in the field of urban forestry, nature conservation and environmental protection
- D2. conduct courses in professional secondary and other similar schools



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- D3. conduct businesses and tasks in publicist writing and media connected with urban forestry, nature conservation and environmental protection
- D4. professionally and scientifically upgrade through different educational ways and postgraduate study
- D5. gather, process and interpret reference sources and prepare simple written professional or scientific paper



Connection of the courses learning outcomes with the study program learning outcomes

Course	General engineering competences			Focused engineering competences														Organizational engineering competences			Developing engineering competences						
	A1	A2	A3	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	C1	C2	C3	D1	D2	D3	D4	D5		
Soil Management	+	+			+					+				+	+							+					
Computer modeling of landscape architecture	+							+									+										
Phytopharmacy in Urban Areas																+											
Water management and protection	+									+					+												
Succession and monitoring of vegetation	+		+														+					+	+			+	+
Applied photointerpretation	+							+									+									+	
Laboratory Methods in Phytopathology																+											
Applied Zoecology						+	+									+											
Breeding of Woody Plants										+						+	+					+	+			+	+
Birds of Urban Forests and Parks	+		+	+		+									+	+											
Animal behavior						+																					
Innovation and entrepreneurship		+				+											+				+					+	
Inventory of greenhouse gases in forestry	+		+														+					+			+		+
Plant nutrition in urban environment						+				+										+		+					+
Game Management	+	+	+	+	+	+					+								+	+	+	+	+	+	+	+	+
Horticultural Dendrology										+							+					+	+	+	+	+	+
Environmentally sound techniques and technologies																		+									
Knowledge of vegetation	+																	+						+		+	+
Nursery production of ornamental plants										+							+					+					
Forest Mycorrhizae																		+									
Waste management						+																					
Zoonoses in natural habitats and urban areas		+																			+						
Typological classifications of vegetation	+		+			+											+							+	+	+	+
Invasive plants		+				+											+				+	+					
Analysis of management plans of park objects										+										+							
Multipurpose trails in urban and protected areas	+					+											+										
Environmental Chemistry		+				+											+					+					
Selection and use of ornamental trees and shrubs in the landscape design										+							+										
Rare and protected autochthonous woody plants																	+										
Collection and processing of 3D data	+																+									+	
Remediation of degraded land		+								+											+						
Spatial analysis and valorisation	+															+	+										+
Ecotourism	+					+	+										+										
Statistical methods and modelling in forestry	+																+					+					
Conservation of genetic diversity of forest trees	+					+	+	+									+					+					
Preparation and management of ecological projects										+										+		+	+				
Protected nature parts						+	+	+																			
Virgin forests and forest reserves							+										+										
Organizational culture						+											+			+							
Utilization of forest biomass																		+			+						
Mobile applications in forestry																	+										
Species distribution models	+					+										+						+				+	+
Safety and organization of work in urban and protected forests	+																+			+							
Forest roads in protected areas																	+										



Soil Management

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Analyze soil functions. Critically evaluate the functions of soil. Identify the importance of soil in forestry and environmental protection.	partial examination, laboratory exercises, full examination	A2
Soil classification system. Comparative the soil to the national and WRB classification system. Comparative the properties of different type of soils. Evaluate the soil properties essential to the fertility. Evaluate the soil properties crucial for the sensitivity to harmful influences	partial examination, laboratory exercises, full examination	B2, B10, D1
Soil geography. Present the method to make soil map. Presentation the application of soil maps. Soil map using.	partial examination, laboratory exercises, full examination	A1, B10, D1
Explain the diversity of soil functions and his position in terrestrial ecosystem management.	partial examination, laboratory exercises, full examination	B2, B10, D1
Evaluate a different soil type within the soil quality system. Selecting the methods to increase soil fertility. Selecting the methods for meliorating chemical and physical soil properties.	partial examination, laboratory exercises, full examination	B10, B11, D1
Compare the geogenic and limit of harmful values in the soil. Valorization of soil considering with his degradation. Review harmful effects on soil (managment influenes, influence of forest fire on the soil, multipurpose uses of forest land, conversion of forest land) and present measures for its protection.	partial examination, laboratory exercises, full examination	B7, B10, D1
Organize soil monitoring of forest ecosystems. Compare the state of soil protection at a global, regional and national level. The implementation and regulations on the soil protection.	partial examination, laboratory exercises, full examination	B7, B10, B13



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures (L)	-	-	-	45	15	2
Laboratory Exercises (LE)				15	15	1
Field courses (FC)				8	1	0,3
Exam (E)	100 %	50-60 %	Sufficient (2)	4	77	2,7
		61-75 %	Good (3)			
		76-90 %	Very good (4)			
		91-100%	Excellent (5)			
TOTAL	100%			72	108	6



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Evaluation elements	Description	Deadline	Compensation
Lectures (L)	On the lectures is checked the students' presence. The student can justifiably be absent with up to 30% of teaching hours (5 lectures).	Semester (45 hours of direct teaching)	-
Laboratory Exercises (LE)	Exercises are attended by groups. Four practical exercises are performed (soil nutrients, harmful substances, micro aggregate stability, consistency)	According syllabus and agreement with the students	In the case of a justified reason, the student draws up absence from the particular exercise term
Field courses (FC)	Field course is performed as complex field course, and the terms are published at the beginning of the semester.	Second half of the semester.	-
Partial exam (PE)	Students can take the exam in two parts (partial). The first part takes place after ~ 50% of theoretical teaching, and the term is agreed with the students. The exam consists of a written and oral part (the written part of the exam must be passed for oral instruction), and it is about 50% of the subjects provided by the theoretical program. Partial exams can be accessed by students who have no more than one absence from the lectures. Those students who take the first partial exam will also take the second part of the exam on some of the regular test terms by the end of the current academic year. The arithmetic mean of the two grades represents the grade of the exam that) gives the final grade	Agreement with the students in second half of the semester.	
Full exam (FE)	Students who have fulfilled their obligations in relation to lectures, exercises and field courses can access the regular exam. Examination of the entire program (realized through theoretical lectures, exercises and field courses) is examined on the exam. Students on exam (pre-printed questions) fit the questions asked in the form of rounding and written answers. A written exam is a condition for access to an oral exam, when gets a final grade	Published test deadlines.	



Computer modeling of landscape architecture

Learning outcomes and assessment methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Analyze information technologies and tools for Urban design (systematization of IT and software technologies, expectations of application development and IT equipment, impact on the design of the built environment, data exchange, organization of professional work, geographic information systems, data collection and management).	lab assignments	A1
Present the development of computer graphics for computer landscape modeling and visualization of the environment (computer visualization, scene elements, criteria for selecting display modes, landscape visualization, simulations, creation of virtual worlds, scientific visualization).	lab assignments, final presentation	B5
Formulate digital production (subjective and additive production technologies, application of technologies).	lab assignments, final presentation and colloquium/exam	
Present a responsible environment (development of the idea of a computer as a consultant, review of technologies, collection and processing of information from the environment).	lab assignments, final presentation and colloquium/exam	B14



Grading system =Taking the exam

Assessment elements	Percentage in the grade	Grading scale	Grade	Number of hours of direct teaching	Number of hours for a student in addition to direct teaching	ECTS
Lectures	-	-	-	15	0	1
Partial exam I. i II. (PE)	20%	60-70%	dovoljan (2)	0	30	1
		71-80%	dobar (3)			
		81-90%	vrlo dobar (4)			
		91-100%	izvrstan (5)			
Field trip	-	-	-	8	22	1
Preparation of assignments (Lab)	70%	Partially sloppy and difficult to understand, requiring significant corrections and on time	sufficient (2)	30	60	2,5
		Orderly, readable, requiring significant corrections and on time	good (3)			
		Orderly, readable, requiring smaller corrections and on time	very good (4)			
		Orderly, readable, accurate and on time	excellent (5)			
Presentation (P)	10%	60-70%	sufficient (2)	0	15	0,5
		71-80%	good (3)			
		81-90%	very good (4)			
		91-100%	excellent (5)			
TOTAL	100%	(PEx20 + Labx70 + Px10)/100		53	127	6



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Evaluation elements	Maximum points or Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Final exam* (FE)		60-70%	sufficient (2)	0	30	1
		71-80%	good (3)			
		81-90%	very good (4)			
		91-100%	excellent (5)			
TOTAL	100%	(FEx20 + Labx70 + Px10)/100				

*** students who do not pass the partial exams during the semester shall take the final exam.**



Detailed guidelines for preparation and taking the midterm exams, papers, partial exams, written and oral exams:

Assessment elements	Description	Deadline	Extension
Lectures + labs	Students' attendance is checked and recorded. For justified reasons, students are allowed to miss up to 15 % of direct lessons.	term (60 hours of direct lessons)	-
Fulfilment of assignments	Students are divided into groups for labs. After the simple introductory assignment which is to be done within two weeks, students are given a layered assignment in three different programmes (AutoCAD, QGIS and Edificius Land) which they present at the end of the term. Students are graded for their precision, logic, order and regularity in attendance (assignments need to be handed in on time).	on a specified date	Exceptionally, when there is a justified reason, student can re-take certain labs to compensate for his/her absence
Partial exam I.	All students can attend the first colloquium. Students answer the questions, circle the correct answers, describe the pictures on a pre-prepared printed exam or via the Merlin platform. The colloquium is graded and participates in the final grade of the course.	7. week	
Partial exam II.	The second colloquium can be attended by all students, except those who did not participate in the first colloquium. Students answer the questions, circle the correct answers, describe the pictures on a pre-prepared printed exam or via the Merlin platform. The colloquium is graded and participates in the final grade of the course.	15. week	
Exam	Students are required to prepare written papers of 1000 words on a subject covered during the lectures.		



Phytopharmacy in urban areas

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Present legislative and basic terms in phytopharmacy (plant protection products, laws, active substance, concentration, dosage, phytotoxicity)	Colloquium, final exam.	B9
Valuate different plant protection products – zoocides, biotechnical insecticides, fungicides, herbicides, acaricides, limacides, Rodenticides, pheromones). Monitor and repress harmful organisms with pheromones, biotechnical insecticides, repellents, classify plant protection products.	Colloquium, final exam.	B9
Present endotherapeutical methods of tree protection in urban areas (macro and micro injection, efficiency, advantages and disadvantages, BITE tool method).	Colloquium, final exam.	B9
Recommend ecologically acceptable plant protection measures (possibilities, limitations, mechanical, physical, biological and quarantine measures).	Colloquium, final exam.	B9
Present instructions for safe handling and transport of pesticides and measures of emergency help in case of contamination with pesticides (instructions for safe handling and transport of pesticides, measures for safe manipulation of pesticides, storage, instructions for giving emergency help persons contaminated with pesticides).	Colloquium, final exam.	B9



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	-	-	-	30	0	1
Practical exercises (V)	-	-	-	30	0	1
Field classes and field class seminar (TN)	-	-	-	8	8	0,5
Midterm exam on basics of phytopathology (K)	20%	60-70%	sufficient (2)	0	35	0,5
		71-80%	good (3)			
		81-90%	Very good (4)			
		91-100%	excellent (5)			
Exam (PUI)	80%	60-70%	sufficient (2)	0	100	3
		71-80%	good (3)			
		81-90%	Very good (4)			
		91-100%	excellent (5)			
TOTAL	100%	(Kx20 + PUIx80)/100		68	143	6

Evaluation elements	Maximum points or Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Final exam* (ZI)		60-70%	sufficient (2)	0	135	3,5
		71-80%	good (3)			
		81-90%	very good (4)			
		91-100%	excellent (5)			
TOTAL	100%	(ZIx100)/100				

* students who do not pass the midterm exams during the semester shall take the final exam that makes up 100 % of the grade.



Detailed explanation of rules for preparing and taking midterm exams, partial exams, written and oral exams:

Evaluation elements	Description	Deadline	Compensation
Lectures + practical exercises	Students' attendance is checked and recorded. Students can be absent with justification from maximum 15 % of direct teaching	semester (60 direct teaching hours)	-
Completion of practical exercises	Students attend practical exercises in groups. Practical exercises with examples of preparation and usage of pesticides and application machines are carried out	semester (30 direct teaching hours)	In case of justified reason student can additionally compensate for the absence from the exercise.
Midterm exam on basics of phytopathology	All students can take the first midterm exam. Students provide answers to pre-printed test questions, they round the correct answers, describe pictures. The written midterm exam is graded and taken into account for the final grade of this course.	From 15 th week	Students who passed midterm exam can take written exam.
Written exam	The exam can be taken by students who attended practical exercises and passes the midterm exam. Students provide answers to pre-printed test questions, they round the correct answers, describe pictures. The written exam is graded and taken into account for the final grade of this course	Exam terms	-
Oral exam	Students who pass the written exam are asked questions relating to the different parts of the course content. The following formula is used to calculate the final grade for this course: $K \times 25 + PUI \times 75 / 100$		



Water Management and Protection

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Identify changes, disturbances and excesses events in forest ecosystems (functioning of forest ecosystems, stability and sustainability, changes, disturbances and degradation of forest ecosystems, causes and consequences of changes and disturbances in forest ecosystems, excesses events in nature, causes of excesses events in forests, time of occurrence, intensities, indicators of damage, consequences in forests, economic consequences)	written tests and oral exam	A1, B7, B9, B19, B13
Analyse monitoring of water, air and soil pollution in forests (reasons for monitoring water, air and soil in forests, water pollution, water forms in forest ecosystems, water quality, water quality indicators, methods of determining water status in forests and urban areas, equipment for determining, monitoring air quality and the condition of forest and urban soils)	written tests and oral exam	A1, B7, B9, B19, B13
Present monitoring of dynamics of hydrological conditions and climate in forests (forest hydrology, dynamics of waters in lowland forests, monitoring of precipitation, surface, flood, watercourses, groundwater, climate, weather, climatic phenomena, monitoring of climatic elements in forests and nurseries, processing and display of climate data)	written tests and oral exam	A1, B7, B9, B19, B13
Interpret the monitoring of biomass, phenophases and mycorrhiza in forest ecosystems (biomass plants, animals, microorganisms, stands, ecosystems), tree biomass, methods for determining the biomass of tree, phenology, description of phenophases, organization of monitoring of phenophases of forest trees, data processing using phenological database, phenological observations within ICP Forests, mycorrhiza, significance for plants)	written tests and oral exam	A1, B7, B9, B19, B13
Present the program of monitoring the damage of forest ecosystems (monitoring / habitat and stressors, ICP Forests, visual assessment of canopy condition, causes and consequences of tree disturbances, tree condition databases, regulations on tree condition assessment, forest soil condition assessment, meteorological monitoring parameters, ground vegetation, phenophase of forest trees, tree vitality, hierarchical method of tree vitality assessment based on morphological indicators, tree vitality indicators)	written tests and oral exam	A1, B7, B9, B19, B13
Analyze ecological equipment and regulations for monitoring the condition of forests (equipment and instruments for monitoring meteorological elements, regulations related to monitoring the condition of forests)	written tests and oral exam	A1, B7, B9, B19, B13



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures (La) attendance	5%	100% 90% 80% 70%	Excellent (5) Very good (4) Good (3) Sufficient (2)	30	-	1,5
Exercises (Ea) attendance	5%	100% 90% 80%	Excellent (5) Very good (4) Good (3)	15	-	0,5
Field work (FWa) attendance	3%	100%	Excellent (5)	8	-	0,25
Writing exercises (E) and field practice report	30%	Partly disordered and incomprehensible, with major corrections and on time	Sufficient (2)	-	50	1,7
		In order, easy, with bigger corrections and on time	Good (3)			
		In order, easy, with minor corrections and on time	Very good (4)			
		In order, easy, accurate and timely	Excellent (5)			
Partial exam (PE)	30%	50-62%	Sufficient (2)	4	50	1,55
		63-76%	Good (3)			
		77-90%	Very good (4)			
		91-100%	Excellent (5)			
Oral exam (OE)	27%	50-62%	Sufficient (2)	0,5	23	0,5
		63-76%	Good (3)			
		77-90%	Very good (4)			
		91-100%	Excellent (5)			
TOTAL	100%	(Lax0,05)+(Eax0,05)+(FWax0,03)+(Ex0,3)+(PEx0,3)+(OEx0,27)		57,5	123	6



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Evaluation elements	Description	Deadline	Compensation
Attendance of lectures and exercises	The attendance is checked, and the attendance of the students is recorded. The student can reasonably be absent from a maximum of 30% lectures and 20% exercises and cannot be absent from the field work. Attendance is evaluated by grades 2-5, and this grade is taken when calculating the final grade of the subject.	semester (53 hours of direct lecturer)	Exceptionally, in the case of a justified reason the student should compensate for the lack of individual lectures or field work
Exercises and reports from the field work	Exercises are attended by groups. As part of the exercise is carried out 6 practical exercises. At the beginning of each exercise, students receive task templates and the layout of exercise reports in printed form. Estimated accuracy, neatness and regularity (exercise submitted on time). From each exercise, the student gets a grade and the average of all grades in the exercise is taken when calculating the final score from the subject.	In accordance with the agreed terms.	Exceptionally, in the case of a justified reason, the student draws the absence of the individual exercise.
Partial exam	Students can write two written tests during the semester according to personal choice (first on half of the semester and the second at the end of the semester). Students who score more than 50% of the correct answers from both tests do not write a final written test. Students who do not reach 50% correct answers from the written test are writing the final written test. All test scores are taken in the calculation of the final grade of the subject.	7. and 15. week in semester	Students who do not pass two written tests may take the final written exam.
Written exam	A written final test is written by all students who have not passed two partial written tests during the semester. Students answer questions from the entire material. Students who get more than 50% correct answers from the test have passed the written test. All grades from the written tests participate in the calculation of the final grade of the subject.	Exam terms	The student has the right three times to go to the exam.
Oral exam	Students who pass a written test and who receive passive grades from exercises, and have passive grades from lectures, exercises, and field work attendance take the oral exam. Each student receives questions from the entire material during the oral exam. The final grade of the subject is obtained according to the percentage representation of each grade in the overall rating according to the formula: (Lax0,05)+(Eax0,05)+(FWax0,03)+(Ex0,3)+(PEx0,3)+(OEx0,27)	Exam terms	The student has the right three times to go to the exam



Succession and monitoring of vegetation

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Present the types of vegetation change (progressive and regressive succession).	Final exam	D1, D2, D4, D5
Interpret the need for monitoring the conservation status of species and habitat types (in accordance with the provisions of the Directive).	Final exam	A1, B9, B14, D1, D2, D5
Interpret syndynamic units (stage, phase, successive sequence, climax) and succession processes.	Final exam	A1, A3, B9, B14, D1, D2, D4, D5
Explain and analyze the content of habitat and species monitoring programs.	Final exam	A1, A3, B9, B14, B15, D1, D2, D4, D5
Explain the syndynamic character of plant communities by defining mutual differences.	Final exam	A1, A3, B9, B14, D1, D2, D4, D5
Analyze the role of phytosociology and floral composition in estimation of vegetation and habitat conditions.	Final exam	A1, A3, B9, B14, D1, D2, D4, D5
Valorize the degree of succession, ie the plant community with regard to the origin and duration.	Final exam	A1, A3, B9, B14, B15, D1, D2, D4, D5
Present the state of vegetation and ecosystems by basics of floral composition.	Final exam	A1, D1, D2, D4, D5



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures (L)	-	-	-	30	0	0,5
Final exam (FE)	80%	60-70%	Sufficient (2)		30	1
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
TOTAL	100%			30	30	2

Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Evaluation elements	Description	Deadline	Compensation
Attendance of lectures	The attendance is checked and the attendance of the students is recorded. A student may justifiably be absent with a maximum of 20 % of direct teaching hours.	semester (30 hours of direct lecturer)	-
Written exam (FE)	Examinations can be attended by students who have completed exercises and preparation and positive evaluation of the seminar paper. The students in the printed exam answer the questions asked.	Exam terms	



Applied photointerpretation

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Pronounce the definition of photo interpretation. Explain the visual, measured and digital interpretation. Observe the influence of individual factors on the readability of the images.	comprehensive exam	D4
Prepare and describe the image components. Present procedures for image analysis.	comprehensive exam	A1, B3, B10, B14, D4
Describe the types and characteristics of the Photo Interpretation Keys. Describe the application of CIR images to monitor vegetation damage Analyse the possibilities of applying photointerpretation in urban forestry, nature protection and the environment.	comprehensive exam	A1, B3, B10, B14, D4
Specify types and conditions for stereoscopic observation of images. Define scale of aerial photographs. Show aerial photographs orientation. Explain the methods of measurement interpretation to determine the constituent and structural parameters.	comprehensive exam	A1, B3, B10, B14, D4
List the methods of digital image processing Explain the digital interpretation Identify and compare a controlled and uncontrolled classification Explain the accuracy of the classification	comprehensive exam	A1, B3, B10, B14, D4



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures (L)	-	-	-	15	0	0.5
Exercises (E)	-	-	-	15	0	0,5
Comprehensive exam (CE)	100 %	60-70%	Sufficient (2)	-	30	1
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
UKUPNO	100 %	(CEx100)/100		30	30	2

Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Evaluation elements	Description	Deadline	Compensation
Lectures	On the teaching is checked and recorded the presence of students. The student can justifiably absent from the highest 20% of hours of direct teaching (3 lectures).	semester (30 hours of direct lecturer)	The student work off for absence from the individual lectures term
Exercises	Exercises are held in a computer classroom. Each student is doing individual tasks. The accuracy, precision, regularity, and engagement on the exercises are evaluated. 2 absences from exercises are allowed with the additional preparation of the seminar work.	In accordance with the syllabus and agreed terms directly with the students.	The student does the absence of a particular term exercise
Regular examination deadlines	All students who have fulfilled their obligations in relation to lectures are eligible to attend a regular exam period. On exam checks knowledge of the entire program (implemented through theoretical lectures and exercises).	Published examination deadlines.	-



Laboratory methods in phytopathology

Learning outcomes and assessment

Learning outcome (LO)	Evaluation methods	Connection with the study program LO
List and explain importance of laboratory methods in phytopathology from urban forestry and nature and environment point of view.	Laboratory assignments, final exam.	B9
Plan, prepare and lead procedures and evaluate results of conducted method for pathogen identification in plant organs.	Laboratory assignments, final exam.	B9
Plan, prepare and lead procedures and evaluate results of conducted method of identification of pathogens by isolation. Describe and explain preparation of nutrition media for isolation and growth of pathogens. Describe, explain and differentiate procedures of organs and tissue samples preparation for the purpose of pathogen isolation from diseased cells/tissues.	Laboratory assignments, final exam.	B9
List basic procedures of pathogen identification by molecular methods. Recognize and choose cases in which these methods of pathogen identification are necessary.	Laboratory assignments, final exam.	B9



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	15%	-	-	15	0	0,5
Practical exercises (V)	15%			15	0	0,5
Exam (PUI)	70%	60-70%	sufficient (2)	0	15	1,0
		71-80%	good (3)			
		81-90%	Very good (4)			
		91-100%	excellent (5)			
UKUPNO	100%	(Px15 + Vx15 + PUIx70)/100		30	15	2

Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Evaluation elements	Description	Deadline	Compensation
Lectures	Students' attendance is checked and recorded. Students can be absent with justification from maximum 15 % of direct teaching	semester (15 direct teaching hours)	-
Written exam	The exam can be taken by students who attended lectures. The written exam is graded and taken into account for the final grade of this course	Exam terms	-
Oral exam	Students who pass the written exam are asked questions relating to the different parts of the course content. The following formula is used to calculate the final grade for this course: PUIx100/100		



Applied zoecology

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Describe the specifics of Croatian biodiversity, especially in the context of fauna (invertebrates, fish, amphibians, reptiles, birds, mammals)	Colloquium exams and final exam	B3, B8, B13
Name the IUCN categories of threatened species (from EX: extinct to DD: data deficient)	Colloquium exams and final exam	B2, B3, B8
Illustrate the differences between the organization levels of biological systems (individual, population, biocenosis, ecosystem, biome, biosphere).	Colloquium exams and final exam	B2, B8
Discuss the importance and historical and current role of ecology, or zoecology, in understanding the complexity of the relationship between living and non-living things	Colloquium exams and final exam	B2
Distinguish numerous roles of abiotic and biotic factors in changing dynamics of animal populations, biocenoses and ecological systems	Colloquium exams and final exam	B13
Explain the matter cycling and energy flow through the ecosystem from primary producers, through primary to secondary, tertiary and other higher levels of consumers.	Colloquium exams and final exam	B8
Explain the importance of the relationship stability between production (autotrophic) and consumer (heterotrophic) components of different ecosystems	Colloquium exams and final exam	B13
List animal species (indigenous, non-native, invasive) typical to different habitat types in Croatia	Colloquium exams and final exam	B2, B3



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	-	-	-	30	-	0,5
Seminar	30,3%	Satisfies with major corrections or additions.	Sufficient (2)	-	10	0,33
		Satisfies with significant corrections and additions.	Good (3)			
		Satisfies with minor corrections and additions.	Very good (4)			
		Satisfies without and corrections.	Excellent (5)			
Colloquium exam 1	33,3%	60-74%	Sufficient (2)	-	10,0	0,33
		75-84%	Good (3)			
		85-94%	Very good (4)			
		95-100%	Excellent (5)			
Colloquium exam 2	33,3%	60-74%	Sufficient (2)	-	10,0	0,33
		75-84%	Good (3)			
		85-94%	Very good (4)			
		95-100%	Excellent (5)			
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
TOTAL	100%			30	30	2



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Evaluation elements	Maximum points or Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Final exam (FE)	100 %	60-74% 75-84% 85-94% 95-100%	Sufficient (2) Good (3) Very good (4) Excellent (5)		30	1
TOTAL	100%					

***students who do not successfully pass colloquium exams, i.e. partial exams during the semester, are required to take the final exam (FE), where the grade from the final exam makes up 50% of the total grade, and the grade from the seminar also 50%**

Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Evaluation elements	Description	Deadline	Compensation
Lectures	The student attendance is checked and recorded. Student absence of max 20 % of lectures is allowed.	semester (30 hours of direct lecturer)	-
Seminar	Students write and present their seminar work related to relevant forest protection topics	semester	-
Colloquium exam 1 Colloquium exam 2	Colloquium exam is evaluated and participate in the final assessment of the subject	8th week 15th week or in agreement with the students	Students who pass the colloquium exams don't have to take the final exam
Final exam	Students who have not passed the colloquium exams have to take the final exam. The final exam is graded and participates in the final grade of the course.	exam terms	-
Oral exam	Students who pass the written exam and want to raise their final grade can take the oral exam.	exam terms	-



Breeding of Woody Plants

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
To explain the process of classical breeding of forest tree species, methods of selection; To choose suitable candidates in the process of mass selection; to evaluate individual candidates and choose plus individuals.	Final exam	B6, C2, D1, D2, D4, D5
To perform basic cloning techniques. To explain and compare basic traditional as well as modern methods and techniques of cloning forest tree species.	Final exam	B6, C2, D1, D2, D4, D5
To explain the process of genetic testing of plus trees and the choice of elite trees; To calculate genotypic and additive values of individuals, heritability and genetic gain based on data from a genetic test; To choose elite trees based on genetic testing results.	Final exam	B1, B6, C2, D1, D2, D4, D5
To explain the role of controlled crossing and the activities necessary for the implementation of controlled crossing in the breeding cycle; To choose an option and devise a plan for controlled crossings of elite trees; To design mass production of genetically improved varieties.	Final exam	B1, B6, C2, D1, D2, D4, D5



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	-	-	-	30	0	0.5
Final exam (ZI)	100%	60-70% 71-80% 81-90% 91-100%	sufficient (2) good (3) very good (4) excellent (5)	0	30	1.5
TOTAL	100%			30	30	2

Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Tracking elements	Description	Deadline	Compensation
Lectures	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 20 % of direct teaching hours.	semester (30 hours of direct teaching)	-
Written exam	Exams can be taken by students who regularly attended lectures. The students answer the questions from the entire course content, rounding out the exact answers. The written exam is evaluated and participates in the final grade of the course.	examination deadlines	-
Oral exam	Students who pass a written exam are being asked questions from different parts of the entire course content.	examination deadlines	-



Birds of urban forests and parks

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Get acquainted with the ecology, biology, ethology, etc. of birds that find habitat within urban areas, their requirements and limiting factors of arrival.	final exam	A1, A3, B13.
Analyze bird protection opportunities within urban areas. Explain monitoring and taking measures to protect birds in urban areas.	final exam	B1, B8, B14
Present the ways and conditions of elaboration, studies, risk assessment, etc. related to the ornitho fauna within urban areas and protected nature objects.	final exam	A1, B3, B10,

Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures (L)	-	-	-	30	-	1,0
Partial exam (PE)	100%	60-70%	Sufficient (2)	-	30	1,0
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
TOTAL	100%	(L+PE)/100		15	30	2,0

Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Evaluation elements	Description	Deadline	Compensation
Attendance of lectures and exercises	Checks and records attendance of students. A student may justifiably be absent with a maximum of 20 % of direct teaching hours.	semester (30 hours of direct lecturer)	-
Oral exam	Students are asked questions from different parts of the program content. (FEx100)/100	Exam terms	-



Animal behavior

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Identify the main scientists and their work that set the foundations of ethological research.	Colloquium exams and final exam	B2
Identify the difference between the ultimate and proximal causes of animal behavior	Colloquium exams and final exam	B2
Identify innate behaviors in animals.	Colloquium exams and final exam	B2
Identify different animal learning mechanisms.	Colloquium exams and final exam	B2
Identify examples of natural and sexual selection and the impact of both on the development and behavior of animal species.	Colloquium exams and final exam	B2
Link the behavior of animals in nature depending on their reproduction or survival	Colloquium exams and final exam	B2
Classify different reproductive strategies of animals with emphasis on monogamy and polygamy	Colloquium exams and final exam	B2
Identify sexual dimorphism and identify intrasexual and intersexual selection.	Colloquium exams and final exam	B2
Identify various mechanisms in females and males responsible for their own offspring.	Colloquium exams and final exam	B2
Recognize different types of animal behavior in nature depending on their habitats	Colloquium exams and final exam	B2



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	-	-	-	30	-	0,5
Seminar	30,3%	Satisfies with major corrections or additions.	Sufficient (2)	-	10	0,33
		Satisfies with significant corrections and additions.	Good (3)			
		Satisfies with minor corrections and additions.	Very good (4)			
		Satisfies without and corrections.	Excellent (5)			
Colloquium exam 1	33,3%	60-74%	Sufficient (2)	-	10,0	0,33
		75-84%	Good (3)			
		85-94%	Very good (4)			
		95-100%	Excellent (5)			
Colloquium exam 2	33,3%	60-74%	Sufficient (2)	-	10,0	0,33
		75-84%	Good (3)			
		85-94%	Very good (4)			
		95-100%	Excellent (5)			
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
TOTAL	100%			30	30	2



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Evaluation elements	Maximum points or Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Final exam (FE)	100 %	60-74% 75-84% 85-94% 95-100%	Sufficient (2) Good (3) Very good (4) Excellent (5)		30	1
TOTAL	100%					

***students who do not successfully pass colloquium exams, i.e. partial exams during the semester, are required to take the final exam (FE), where the grade from the final exam makes up 50% of the total grade, and the grade from the seminar also 50%**

Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Evaluation elements	Description	Deadline	Compensation
Lectures	The student attendance is checked and recorded. Student absence of max 20 % of lectures is allowed.	semester (30 hours of direct lecturer)	-
Seminar	Students write and present their seminar work related to relevant forest protection topics	semester	-
Colloquium exam 1 Colloquium exam 2	Colloquium exam is evaluated and participate in the final assessment of the subject	8th week 15th week or in agreement with the students	Students who pass the colloquium exams don't have to take the final exam
Final exam	Students who have not passed the colloquium exams have to take the final exam. The final exam is graded and participates in the final grade of the course.	exam terms	-
Oral exam	Students who pass the written exam and want to raise their final grade can take the oral exam.	exam terms	-



Game management

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
REMEMBRANCE – Describing game species in Croatia.	Final Exam	A1, A2, A3, B1, B2, B3, B8, C1, C2, C3, D1
SYNTHESIZING – Develop procedures and protocols toward diseased animals including sampling and shipping for the autopsy	Final Exam	A1, A2, A3, B1, B2, B3, B8, C1, C2, C3, D1
UNDERSTANDING – Describing particular breeding technique and specifically problems in production.	Final Exam	A1, A2, A3, B1, B2, B3, B8, C1, C2, C3, D1
REMEMBRANCE – Describing hunting techniques, hunting ethics an manners)	Final Exam	A1, A2, A3, B1, B2, B3, B8, C1, C2, C3, D1
IMPLEMENTATION – compute hunting facilities in individual hunting ground with normative	Final Exam	A1, A2, A3, B1, B2, B3, B8, C1, C2, C3, D1
IMPLEMENTATION –hunting plans conduction. Explain how to conduct hunting statistic and filling obligatory forms (according to legislative) at the level of hunting year.	Final Exam	A1, A2, A3, B1, B2, B3, B8, C1, C2, C3, D1
IMPLEMENTATION – Pick up appropriate part of hunting ground at the level of game (wildlife) species – growing areas, to know procedure for site class scoring.	Final Exam	A1, A2, A3, B1, B2, B3, B8, C1, C2, C3, D1
REMEMBRANCE – Describing procedure for capacity calculation according to growing status (hunting ground, breeding station or protected area).	Final Exam	A1, A2, A3, B1, B2, B3, B8, C1, C2, C3, D1
IMPLEMENTATION –handling with weapons and ammunition	Final Exam	A1, A2, A3, B1, B2, B3, B8, C1, C2, C3, D1



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	-	-	-	15	0	0.5
Exercises	-	-	-	15	0	0.5
Final exam (ZI)	100%	60-70% 71-80% 81-90% 91-100%	sufficient (2) good (3) very good (4) excellent (5)	0	30	1
TOTAL	100%			30	30	2

Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Tracking elements	Description	Deadline	Compensation
Lectures	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 20 % of direct teaching hours.	semester (15 hours of direct teaching)	-
Exercises	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 10 % of direct teaching hours.	semester (15 hours of direct teaching)	-
Written exam	Exams can be taken by students who regularly attended lectures. The written exam is evaluated and participates in the final grade of the course.	examination deadlines	-
Oral exam	Students who pass a written exam are being asked questions from different parts of the entire course content.	examination deadlines	-



Innovation and entrepreneurship

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Critically assess the state and level of innovation and entrepreneurship in forestry.	Seminar, Final Exam	A2, B2, B14, C3, D4
Apply individual and group techniques of creative thinking.	Seminar, Final Exam	A2, B2, B14, C3, D4
Solve problems creatively, generate and evaluate ideas for solving problems and / or starting a business venture.	Seminar, Final Exam	A2, B2, B14, C3, D4
Assess the conditions for starting an entrepreneurial venture and compile a business plan.	Seminar, Final Exam	A2, B2, B14, C3, D4

Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	-	-	-	30	0	0.5
Seminar (S)	20%	-	-		15	0.5
Final exam (FE)	80%	60-70% 71-80% 81-90% 91-100%	sufficient (2) good (3) very good (4) excellent (5)	0	30	1
TOTAL	100%	(Sx20+FEx80)/100		30	45	2



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Tracking elements	Description	Deadline	Compensation
Lectures	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 20 % of direct teaching hours.	semester (30 hours of direct teaching)	-
Seminar	Students write and present their seminar work related to the given topic/problem	semester	
Written exam	Exams can be taken by students who regularly attended lectures and have prepared their seminar work. The written exam is evaluated and participates in the final grade of the course.	examination deadlines	-
Oral exam	Students who pass a written exam are being asked questions from different parts of the entire course content.	examination deadlines	-



Inventory of greenhouse gases in forestry

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Appoint and describe basic terms in emission/removal of greenhouse gases, their monitoring and reporting	Final Exam	A2, A3, B13, D1, D3, D5
Relate and explain components of reporting system (activities, institutions, sources/sinks)	Final Exam	A2, A3, B13, D1, D3, D5
Recognize the importance of forests and forestry for reporting of greenhouse gases	Final Exam	A2, A3, B13, D1, D3, D5
Explain the role of forest inventory in collection of data on greenhouse gases	Final Exam	A2, A3, B13, D1, D3, D5
Calculate the level of greenhouse gases based on available data in forestry sector	Final Exam	A2, A3, B13, D1, D3, D5
Compare levels of greenhouse gas emission between states and in time series	Final Exam	A2, A3, B13, D1, D3, D5
Assess reporting system based on accessibility of data and calculation methods	Final Exam	A2, A3, B13, D1, D3, D5
Determine possibilities for improvement the emission reporting	Final Exam	A2, A3, B13, D1, D3, D5
Propose measures to sustain and increase the removals of greenhouse gases in forestry	Final Exam	A2, A3, B13, D1, D3, D5



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	-	-	-	15	0	0.5
Exercises	-	-	-	15	0	0.5
Final exam (ZI)	100%	60-70% 71-80% 81-90% 91-100%	sufficient (2) good (3) very good (4) excellent (5)	0	30	1
TOTAL	100%			30	30	30

Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Tracking elements	Description	Deadline	Compensation
Lectures	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 20 % of direct teaching hours.	semester (15 hours of direct teaching)	-
Exercises	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 10 % of direct teaching hours.	semester (15 hours of direct teaching)	-
Written exam	Exams can be taken by students who regularly attended lectures. The written exam is evaluated and participates in the final grade of the course.	examination deadlines	-
Oral exam	Students who pass a written exam are being asked questions from different parts of the entire course content.	examination deadlines	-



Plant nutrition in urban environment

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Valorize soil as a source of plant nutrients and their absorption mechanisms (soil nutrients, nutrients in helat form, nutrients in mineral and organic matter, dynamic equilibrium among nutrients forms in the soil).	Final Exam	B1, B6, C2, D1, D5
To determine the macronutrients (nitrogen, sulfur, phosphorus, potassium, calcium, magnesium; forms of nutrients and their availability, their assimilation in the plant, role in plant metabolism, symptoms of insufficiency) and micronutrients (iron, manganese, copper, zinc, molybdenum and chlorine, their forms in the soil and availability, their role and symptoms of insufficiency).	Final Exam	B1, B6, C2, D1, D5
Interpret redistribution of nutrients in the plant (transfer of nutrients among the roots, stems and leaves, the impact of nutrients on vegetative growth and reproductive cycle).	Final Exam	B1, B6, C2, D1, D5
Valorize plant nutrient status in interaction with stressors in urban environment.	Final Exam	B1, B6, C2, D1, D5
To determine the nutrient status of plants (absorption, efficiency of nutrients use in forest stands and loss of nutrients form plant and ecosystem).	Final Exam	B1, B6, C2, D1, D5
Plan soil fertilization (soil sampling for chemical analysis with the aim of determining appropriate fertilization treatments - mineral, organic or natural fertilizers).	Final Exam	B1, B6, C2, D1, D5



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	-	-	-	30	-	0,5
Partial exam 1	25%	60-74%	Sufficient (2)	-	15	0,75
		75-84%	Good (3)			
		85-94%	Very good (4)			
		95-100%	Excellent (5)			
Partial exam 2	25%	60-74%	Sufficient (2)	-	15	0,75
		75-84%	Good (3)			
		85-94%	Very good (4)			
		95-100%	Excellent (5)			
TOTAL	100%			30	30	2

Evaluation elements	Maximum points or Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Final exam (FE)*	100 %	60-74%	Sufficient (2)		30	1,5
		75-84%	Good (3)			
		85-94%	Very good (4)			
		95-100%	Excellent (5)			
TOTAL	100%					

* Students who do not pass during the semester by a written partial exam, approach to final exam



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Tracking elements	Description	Deadline	Compensation
Lectures	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 20 % of direct teaching hours.	semester (30 hours of direct teaching)	-
Partial exams	Partial exams can be taken by students who regularly attended lectures. The written exam is evaluated and participates in the final grade of the course.	8. week 15. week	-
Written exam	Exams can be taken by students who regularly attended lectures. The written exam is evaluated and participates in the final grade of the course.	examination deadlines	-
Oral exam	Students who pass a written exam are being asked questions from different parts of the entire course content.	examination deadlines	-



Horticultural Dendrology

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
To use International Code of Nomenclature for Cultivated Plants;	exam	B5
To define and explain horticultural importance, biological features and morphological characteristics of the genera of gymnosperms and angiosperms important for urban forestry in Croatia;	exam	B5
To identify and describe the ornamental species and cultivars of gymnosperms and angiosperms important for urban forestry in Croatia according to: habit, bark, twigs in winter, leaves, flowers, cones and fruits;	exam	B5
To categorise gymnosperms and angiosperms important for urban forestry in Croatia according to ornamental and phenological features;	exam	B5
To identify and determine the applicability of ornamental gymnosperms and angiosperms important for urban forestry in Croatia in particular examples;	exam	B5, B13, C2, D1, D2, D3, D4, D5
To identify and distinguish ornamental gymnosperms and angiosperms important for urban forestry in Croatia in certain vegetation period; to identify, recognise and determine the ornamental value of taxa in different vegetation periods;	exam	B5, C2
To choose ornamental gymnosperms and angiosperms important for urban forestry in Croatia for various purpose in urban forestry;	exam	B5, B13, C2, D1, D2, D3, D4, D5
To argue the choice of ornamental taxa important for urban forestry in Croatia for horticultural use in urban forestry, especially in planning urban green spaces, taking into account the optimal variety of ornamental plants;	exam	B5, B13, C2, D1, D2, D3, D4, D5



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures (L)				30		1
Exercises (E)	5%	60-70%	Sufficient (2)	15		0.5
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
Homework (HW)	5%	70-80%	Sufficient (2)		20	0.5
		81-89%	Good (3)			
		90-94%	Very good (4)			
		95-100%	Excellent (5)			
Field work reports (FWR)				24		0.5
Learning material collection (LM)					20	0.5
Final exam (FE)	90%	60-70%	Sufficient (2)		75	3
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
TOTAL	10%	(Fex90+Ex5+HWx5)/100		69	115	6



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Evaluation elements	Description	Deadline	Compensation
Attendance of lectures, exercises and field work	Student attendance is recorded. Student may not be absent more than 20% of lectures and 10% of exercises.	II semester	
Exercises (E)	The exercises are attended in groups. The students use plant material and digital photos. The practicum exercises enable students to acquire practical skills to recognize woody species on the basis of different morphological characteristics: habit, bark, leaves, twigs of deciduous species in winter, cones and fruits. At the end of each exercise the accuracy of determination is evaluated, and the evaluation affects the final grade.	II semester	
Homework (HW)	After each lecture and practicum exercises, the students do their homework and submit it via the Herbarium DEND application. The homework is evaluated and affects the final grade.	II semester	
Field work reports (FWR)	After field work students prepare reports. Professor's signature confirms the accuracy of the report.	II semester	
Learning material collection (LM)	On field work students collect learning material. Professor's signature confirms the accuracy of the material.	II semester	
Written exam	Access requirements: professor's signature (regular attendance at lectures, exercises and field work; positively graded all exercises and homework; signed field work reports; collected and signed learning material).	Exam terms	
Oral exam	Access requirement: positively graded written exam. In the oral part, apart from theoretical knowledge, students have a practical determination of ornamental woody species according to different morphological characteristics. The final grade is obtained according to the formula: (FEx90+Ex5+HWx5)/100	Exam terms	



Environmentally sound techniques and technologies

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Analyse felling and tree processing (limiting and influencing factors of harvesting operations, procedures and phases of timber production, influence of society, terrain characteristics, harvesting mechanisation level, theory and procedures during tree felling, methods of timber processing, machines for mechanised felling and processing and their purpose, wood defects and irregularities, quality assortment structure of broadleaved and conifer timber for with respect to JUS and EN standards).	Exercises, Final exam	B11
Presentation of timber transport (division of timber transport, division of timber extraction in terms of mechanisation level and load-ground contact, limitations and suitability of individual timber transporting vehicles with regard to field and stand conditions, timber extraction distance and environmental acceptability, division and features of long distance timber transport, types of landing sites, features of timber transport by waterways and railway, long distance timber transport by trucks).	Exercises, Final exam	B11
Parse the planning and design of all forms of forest roads, primary and secondary opening of forest areas (the meaning of forest transport infrastructure for the entire forest management, forest road classes, phase of establishment and management of optimal forest roads network, parameters of assessment of quantity and quality of forest road network, primary and secondary opening of forest land – theoretical models, constructive elements of forest road, design of forest roads – basic stages of work).	Exercises, Final exam	B11
Present the construction and maintenance/reconstruction and closure of forest roads (procedure of the construction of forest roads – basic phases of work, construction technology in the lowland area and on sloped terrains, maintenance of forest roads, causes of damage, supervision of works, closure of roads).	Exercises, Final exam	B11
Determine the damage of forest soils and stands by forest machines (wheel ruts, measurement methods, estimation models for depth of ruts, soil layer transfer, soil disturbance area, soil compaction, methods for determining soil compaction due to forest vehicle passage, natural soil recovery, technical solutions for reduction of weight of forest machinery and vehicles, problem, knowledge and consequences of damage and actions for reduce the level of damaging trees)	Exercises, Final exam	B11
Analyse actions to reduce environmental pollution by exhaust gases and harmful substances from forest machinery (harmfulness of exhaust gases, technical actions to reduce the amount of harmful exhaust gases, remote monitoring systems for forest machinery and vehicles, biofuels, ecological properties of fuels and lubricants, energy consumption of forest vehicles, development of forest machinery)	Exercises, Final exam	B11



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures (L)	-	-	-	30	0	1
Exercises (E)	10%	60-70%	Sufficient (2)	27	30	1
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
Field work (FW)	10%	Present, participates passively	Sufficient (2)	27	30	1
		Present, closely follows and participates	Good (3)			
		Present, includes with questions and comments	Very good (4)			
		Present, suggests concrete suggestions related to the theme of field work	Excellent (5)			
Test I, II and III	80%	60-70%	Sufficient (2)	0	30	3
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
TOTAL	100%	(Ex10 + Fw10 + FEx80)/100		84	90	6



Evaluation elements	Maximum points or Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Final exam (FE)	80 %	60-70% 71-80% 81-90% 91-100%	Sufficient (2) Good (3) Very good (4) Excellent (5)			3
TOTAL	100%	(Ex10 + Fw10 + FEx80)/100				

* Students who during the semester do not pass the subject by a written test shall attend the exam, that makes 80% of the grade, and the remaining 20% make a grade out of the exercise.

Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Evaluation elements	Description	Deadline	Compensation
Attendance of lectures and exercise	The attendance is checked and the attendance of the students is recorded. A student may justifiably be absent with a maximum of 20 % of direct teaching hours.	semester (84 hours of direct lecturer)	-
Test I	All students can attend the first test. Students answer the questions, circle the correct answers, describe the pictures on a pre-prepared printed exam or via the Merlin platform. The test is graded and participates in the final grade of the course.	5 th week	
Test II	Students who have passed the first test can attend the second test. Students answer the questions, circle the correct answers, describe the pictures on the pre-made printed exam. The written test is graded and participates in the final grade of the course.	10 th week	
Test III	Students who have passed the first and the second test can attend the third test. Students answer the questions, circle the correct answers, describe the pictures on the pre-made printed exam. The written test is graded and participates in the final grade of the course.	15 th week	
Written exam	Examinations can be attended by students who have completed exercises and field teaching. The students in the printed exam answer the questions asked. The written exam is evaluated and participates in the final grade of the subject.	Exam terms	-
Oral exam	Students who pass a written exam are asking questions from different parts of the program content.	Exam terms	-



Knowledge of vegetation

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Interpret the forest vegetation of Croatia from the ecological, flora-genetic, syntaxonomic and biogeographic point of view	Preliminary exam, final exam	A1, B10, B13, D2, D4, D5
Interpret the non-forest vegetation of Croatia from the ecological, floro-genetic, syntaxonomic and biogeographical point of view.	Preliminary exam, final exam	A1, B10, B13, D2, D4, D5
Compare the most important forest communities of the Mediterranean region	Preliminary exam, final exam	A1, B10, B13, D2, D4, D5
Distinguish forest and non-forest vegetation of flood and non-flood lowland areas	Preliminary exam, final exam	A1, B10, B13, D2, D4, D5
Distinguish Illyrian from Central European forest communities	Preliminary exam, final exam	A1, B10, B13, D2, D4, D5
Analyze forest and non-forest vegetation of the Republic of Croatia	Preliminary exam, final exam	A1, B10, B13, D2, D4, D5
Present especially valuable and rare plant communities that have primarily a protective and scientific role	Preliminary exam, final exam	A1, B10, B13, D2, D4, D5
Compare and analyze the vegetation of anthropogenic ecosystems	Preliminary exam, final exam	A1, B10, B13, D2, D4, D5
Present non-forest forms of vegetation	Preliminary exam, final exam	A1, B10, B13, D2, D4, D5
Valorize the area based on knowledge about different forms of vegetation and their floral composition	Preliminary exam, final exam	A1, B10, B13, D2, D4, D5



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures (L)	-	-		30	0	1
Creating exercises and field work reports (E)	20%	Partly untidy and incomprehensible, with major corrections and on time	Sufficient (2)	31	30	2
		Neat, legibly, with bigger corrections and on time	Good (3)			
		Neat, legibly, with small corrections and on time	Very good (4)			
		Neat, legibly, correct and on time	Excellent (5)			
Partial exam (Pe)	80%	60-70%	Sufficient (2)	0	90	3
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
TOTAL	100%	(Ex20 + Pex80)/100		61	120	6

Evaluation elements	Maximum points or Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Final exam* (FE)		60-70%	Sufficient (2)	0	90	3
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
TOTAL	100%	(FE_{x80}+Ex₂₀)/100				

* Students who do not pass during the semester by a written partial exam, approach to final exam which accounts for 80% of the final grade, and the remaining 20% is grade from exercises



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Evaluation elements	Description	Deadline	Compensation
Lectures + exercises + reports	The presence of students is being checked and noted. A student may justifiably be absent with a maximum of 20 % of direct teaching hours.	semester (45 hours of direct lectures)	-
1. Partial exam	1st partial exam is available to students who have participated lectures, exercises and field work of the first half of the semester. The students in the pre-printed exam answer the questions asked. The partial exam is evaluated and participates in the final evaluation of the subject, whereupon 60% of the points are to be collected for passing.	8. week	-
2. Partial exam	2nd partial exam is available to students who have participated lectures, exercises and field work and passed the first partial exam. The students in the pre-printed exam answer the questions asked. The partial exam is evaluated and participates in the final evaluation of the subject. The two partial exams are scored with a total of 80 points, each with 40 points. The total is required to collect 60% of points on both the partial exam for passing.	15. week	
3. Partial exam	The third partial exam can be accessed by students who have completed lectures, exercises and field teaching. Students on pre-prepared herbal materials must identify plant species and associate them with the type of habitat and the communities they are associated with. The partial exam is evaluated with a rating passed or repeated. Passage is a condition for entering a final grade.		
Written exam	The exam can attend students with realized exercises and field work. The students in the pre-printed exam answer the questions asked. The written exam is evaluated and participates in the final assessment of the subject, whereby it is necessary to collect 60% points for passing	Exam terms	-
Oral exam	Students who pass a written exam are being asked questions from different parts of the program content.	Exam terms	-



Nursery production of ornamental plants

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Present ways of propagating plants in nurseries (generative and vegetative propagation of ornamental plants)	Practicum, Preliminary exam, Final exam	B6, B14, C2
Analyse Container Planting (Comparison of root crop rootstocks and containerized seedlings, types of containers with the advantages and disadvantages of each type, conditions required for successful production, work dynamics)	Practicum, Preliminary exam, Final exam	B6, B14, C2
Recommend procedures for plant care in nurseries (care work, green fertilization, protection and adaptation of plants in nurseries, ways of planting seedlings)	Practicum, Preliminary exam, Final exam	B6, B14, C2
Present and explain the production of large-scale trees (ways of transplanting, factors influencing the success of the transplant, works on increasing value and receiving large trees)	Practicum, Preliminary exam, Final exam	B6, B14, C2
Identify the reproduction of individual species, species and cultivars of ornamental trees and shrubs	Practicum, Preliminary exam, Final exam	B6, B14, C2



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures (L)	-	-	-	30	0	1,0
Exercises (E)	-	-	-	15	9	0,8
Field work (FW)	-	-	-	16	8	0,8
1. Partial exam (PE1)	50%	60-70%	Sufficient (2)	-	51	1,7
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
2. Partial exam (PE2)	50%	60-70%	Sufficient (2)	-	51	1,7
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
TOTAL	100%	(P+V+TN+K1x50+K2x50)/100		61	119	6

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Final exam* (FE)	100 %	60-70%	Sufficient (2)	-	102	3,4
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
TOTAL	100%	(ZIx100)/100				

Students who do not pass during the semester by a written partial exams, approach to final exam which accounts for 100% of the final grade



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Evaluation elements	Description	Deadline	Compensation
Lectures (L)	The lectures are checked and the presence of students is recorded. Students may be excluded with a maximum of 20% of direct tuition hours.	semester (30 hours of direct lectures)	-
Exercises (E)	Exercises are checked and students attend. Student may justifiably be absent with a maximum of 10% of direct teaching hours. At the end of the semester, the students submit their exercises based on the instruction given from the beginning of the course on the layout and content of the exercises.	After completing classes	-
Field work (FW)	On-site teaching is checked and the presence of students is recorded and no absences allowed. After completing each field course, the students are obliged to write and submit a report from the field teaching.	According to the field curriculum	-
1. Partial exam (PE1)	All students who have enrolled the subject for the first time in the current academic year can access the first queue. In the content of the 1st Column the first half of the tuition is entered. Colloquy is a written test with 20 questions. The exact answer is scored with 1 point, a half answer with 0.5 points, and the inaccurate or empty answer with 0 points. It is necessary to collect more than 60% points for the passage to the colloquium.	8. week	There is a possibility of a correction deadline for the colloquium.
2. Partial exam (PE2)	2. Colleges can be accessed by students who have passed the 1st Colloquium. The second half of the semester enters the second half of the tuition. Colloquy is a written test with 20 questions. The exact answer is scored with 1 point, a half answer with 0.5 points, and the inaccurate or empty answer with 0 points. It is necessary to collect more than 60% points for the passage to the colloquium. Students who get enough points from both hands get the final grade from the subject that is the arithmetic mean of the score from the first and second rounds.	15. week	There is a possibility of a correction deadline for the colloquium.
Written exam	Written exam consists of 20 questions. The exact answer is scored with 1 point, a half answer with 0.5 points, and the inaccurate or empty answer with 0 points. For passage on a written exam, it is necessary to collect more than 60% of the points.	Exam terms	-
Oral exam	The requirement for the oral part of the exam is sufficient number of points collected on the written part of the exam. The final grade is obtained according to the formula (ZIx100)/100		-



Forest mycorrhizae

Learning outcomes and assessment

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Show historical overview of mycorrhiza research.	Seminar, final exam.	B9
Explain role of mycorrhiza in mineralization and nutrition uptake. List and describe basic mineralization mechanisms and list impacts of mycorrhiza on mineralization, nutrition uptake and growth of plants.	Seminar, final exam.	B9
Describe and explain plant protection mechanisms and explain role of ectomycorrhizal fungi in plant protection..	Seminar, final exam.	B9
Show and explain importance and possibilities of use of mycorrhizal fungi as one of indicators of tree health status. Connect health status of forest ecosystem with mycobiota (with its limits). Predict trend and connect status of forest stand health based on mycobiota present – no indices of change, improvement or deterioration of health status, use mycobiota present as a tool for health status prediction.	Seminar, final exam.	B9



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	-	-	-	30	0	0,5
Seminar (S)	35%	-	-	0	10	0,5
Exam (PUI)	65%	60-70%	sufficient (2)	0	20	1
		71-80%	good (3)			
		81-90%	Very good (4)			
		91-100%	excellent (5)			
TOTAL	100%	(Sx35 + PUIx65)/100		30	15	2

Detailed explanation of rules for preparing and taking midterm exams, partial exams, written and oral exams:

Evaluation elements	Description	Deadline	Compensation
Lectures	Students' attendance is checked and recorded. Students can be absent with justification from maximum 15 % of direct teaching	semester (15 direct teaching hours)	-
Seminar	Seminar presentation is graded and taken into account for the final grade of this course.	after 3 rd week	-
Oral exam	Students who present the seminar are asked questions relating to the different parts of the course content. The following formula is used to calculate the final grade for this course: Sx35+PUIx65/100		



Waste management

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
<p>After learning the student will be able to make the valorisation of the waste according to its place of origin and its properties. Students will be able to rank recuperation and recycling methods from the point of view of environmental protection and conservation. Students will be able to propose measures and models for reducing waste.</p>	<p>Partial exam, seminars, Final exam</p>	<p>B2</p>
<p>After learning, the student will be able to judge and analyse the technologies in waste utilization. The student will be able to present organizational measures for the implementation of the waste management system. Students will be able to critically evaluate waste treatment models and assess their impact on the environment.</p>	<p>Partial exam, seminars, Final exam</p>	<p>B2</p>
<p>After learning, the student will be able to classify and evaluate arranged and unmanaged waste landfills. Students will be able to present methods of remediation and reclamation of waste disposal sites. Students will be able to manage and organize waste disposal. The student will be able to valorise the costs of waste disposal.</p>	<p>Partial exam, seminars, Final exam</p>	<p>B2</p>



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures (L)				24	0	
Seminar (S)	10%	50-70%	Sufficient (2)	4	5	1
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
Partial exam (P1)	45%	50-70%	Sufficient (2)	1	10	0,5
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
Partial exam (P2)	45%	50-70%	Sufficient (2)	1	10	0,5
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
TOTAL	100%	(Ex20 + P1x40 + P2x40)/100		30	25	2

Evaluation elements	Maximum points or Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Final exam (FE)	80 %	50-70%	Sufficient (2)			2
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
TOTAL	100%	(Fex80+Sx20)/100				



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Evaluation elements	Description	Deadline	Compensation
Attendance of lectures and making seminar work (S)	The attendance is checked and the attendance of the students is recorded. A student may justifiably be absent with a maximum of 20 % of direct teaching hours. Seminar papers are produced in accordance with the assigned topics related to the analyses and interpretations of the teaching units in the exercises.	semester (30 hours of direct lecturer)	
Partial exams (P1 and P2)	Students will take the exam from the above mentioned thematic areas.	8. and 15. week	Students who do not attend the partial exams will approach the written and verbal part of the exam
Written exam	The exam is attended by students who have not passed the first and second partial exam. Students who have passed the first and second partial exam only access the verbal part of the exam. The students in the pre-printed exam answer the questions asked, round out the exact answers, describe the images. The written exam is evaluated and participates in the final assessment of the subject.	Exam terms	
Oral exam	Students who pass a written exam are asking questions from different parts of the program content. The final grade of the subject is obtained according to the formula: (Fex80+Sx20)/100		



Zoonoses in forest ecosystems

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Specify the definition and meaning of zoonoses, reservoirs and disease vectors, name pathogens and link them to zoonoses that they cause	Colloquium exams and final exam	A2, C2
Describe and interpret the role of small rodents (mice, voles, rats), ticks and wild animals in the spread of certain zoonoses (HVBS, leptospirosis, plague, Lyme borreliosis, tick-borne meningoencephalitis...).	Colloquium exams and final exam	B8, C2
List the causes and reservoirs of the most common zoonoses in Croatia and Europe, and also the basics of their etiology, epizootiology, pathogenesis, treatment, prevention and occurrence in Croatia and in the region	Colloquium exams and final exam	A2, B8, C2
Consider the importance of the "One Health" approach in the management and protection of natural resources, future prevention of the occurrence and spread of new emerging infectious diseases	Colloquium exams and final exam	B8



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	-	-	-	30	-	0,5
Seminar	30,3%	Satisfies with major corrections or additions.	Sufficient (2)	-	10	0,33
		Satisfies with significant corrections and additions.	Good (3)			
		Satisfies with minor corrections and additions.	Very good (4)			
		Satisfies without and corrections.	Excellent (5)			
Colloquium exam 1	33,3%	60-74%	Sufficient (2)	-	10,0	0,33
		75-84%	Good (3)			
		85-94%	Very good (4)			
		95-100%	Excellent (5)			
Colloquium exam 2	33,3%	60-74%	Sufficient (2)	-	10,0	0,33
		75-84%	Good (3)			
		85-94%	Very good (4)			
		95-100%	Excellent (5)			
		71-80%	Good (3)			
		81-90%	Very good (4)			
TOTAL	100%			30	30	2



Evaluation elements	Maximum points or Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Final exam (FE)	100 %	60-74%	Sufficient (2)		30	1
		75-84%	Good (3)			
		85-94%	Very good (4)			
		95-100%	Excellent (5)			
TOTAL	100%					

***students who do not successfully pass colloquium exams, i.e. partial exams during the semester, are required to take the final exam (FE), where the grade from the final exam makes up 50% of the total grade, and the grade from the seminar also 50%**

Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Evaluation elements	Description	Deadline	Compensation
Lectures	The student attendance is checked and recorded. Student absence of max 20 % of lectures is allowed.	semester (30 hours of direct lecturer)	-
Seminar	Students write and present their seminar work related to relevant forest protection topics	semester	-
Colloquium exam 1 Colloquium exam 2	Colloquium exam is evaluated and participate in the final assessment of the subject	8th week 15th week or in agreement with the students	Students who pass the colloquium exams don't have to take the final exam
Final exam	Students who have not passed the colloquium exams have to take the final exam. The final exam is graded and participates in the final grade of the course.	exam terms	-
Oral exam	Students who pass the written exam and want to raise their final grade can take the oral exam.	exam terms	-



Typological classifications of vegetation

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Present national and international typological classifications of vegetation and habitats.	Final exam	A1, D1, D2, D4, D5
Interpret the basic criteria for the emergence of individual classification systems.	Final exam	A1, D1, D2, D4, D5
Analyze the role of phytocenology in typological classifications and the possibility of categorizing habitats using floral composition.	Final exam	A1, A3, B3, B9, B14, D1, D2, D4, D5
Valorize typological classifications (Natura 2000, Eunis, National Habitat Classification, CORINE, Emerald, forest typology, phytocenological classification).	Final exam	A1, B3, B9, D1, D2, D4, D5
Present the role and importance of knowledge about typological classifications of vegetation in the preparation of ecological studies, spatial plans and management plans.	Final exam	A1, A3, B3, B9, B14, D1, D2, D4, D5

Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures (L)	-	-	-	30	0	1
Final exam (FE)	80%	60-70%	Sufficient (2)		30	1
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
TOTAL	100%			30	30	2



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Evaluation elements	Description	Deadline	Compensation
Attendance of lectures	The attendance is checked and the attendance of the students is recorded. A student may justifiably be absent with a maximum of 20 % of direct teaching hours.	semester (30 hours of direct lecturer)	-
Written exam (FE)	Examinations can be attended by students who have completed exercises and preparation and positive evaluation of the seminar paper. The students in the printed exam answer the questions asked.	Exam terms	



Invasive plants

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Explain the ways and means of spreading invasive species, and the characteristics of ecosystems and plants themselves that favor the spread of invasive species.	Final Exam	A2, B1, B4, B13, C2, C3
Interpret the ecological and socio-economic effects of the spread of invasive plants.	Final Exam	A2, B1, B4, B13, C2, C3
Present legislation related to invasive species.	Final Exam	A2, B1, B4, B13, C2, C3
Analyze ways to control and prevent the spread of invasive plants	Final Exam	A2, B1, B4, B13, C2, C3
Present the most important invasive plants in Croatia and the EU.	Final Exam	A2, B1, B4, B13, C2, C3



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	-	-	-	15	0	0.5
Exercises	-	-	-	15	0	0.5
Partial exam (PE)	100%	60-70% 71-80% 81-90% 91-100%	sufficient (2) good (3) very good (4) excellent (5)	0	30	1
TOTAL	100%			30	30	30

Evaluation elements	Maximum points or Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Final exam* (FE)		60-70% 71-80% 81-90% 91-100%	sufficient (2) good (3) very good (4) excellent (5)	0	30	1
TOTAL	100%					



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Tracking elements	Description	Deadline	Compensation
Lectures	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 20 % of direct teaching hours.	semester (15 hours of direct teaching)	-
Exercises	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 10 % of direct teaching hours.	semester (15 hours of direct teaching)	-
Partial exam	Exams can be taken by students who regularly attended lectures. The written exam is evaluated.	15. week	-
Exam	Exams can be taken by students who regularly attended lectures. The exam can be taken by students who have not taken or passed the partial exam. It consists of a written and an oral part.	examination deadlines	-



Analysis of management plans of park objects

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
To analyse elements of description of actual demands and content/compositional wholes of concrete park recreational object	Final Exam	B5, B9, C1
To define of objectives and aimed state of park recreational object and discrepancies of actual state from the desired	Final Exam	B5, B9, C1
To compose, plan and evaluate activities and ways of achieving aimed state for the future period and several category of park recreational object	Final Exam	B5, B9, C1

Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	-	-	-	15	0	0.5
Exercises	-	-	-	15	0	0.5
Final exam (ZI)	100%	60-70% 71-80% 81-90% 91-100%	sufficient (2) good (3) very good (4) excellent (5)	0	30	1
TOTAL	100%			30	30	2



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Tracking elements	Description	Deadline	Compensation
Lectures	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 20 % of direct teaching hours.	semester (15 hours of direct teaching)	-
Exercises	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 10 % of direct teaching hours.	semester (15 hours of direct teaching)	-
Seminar paper and report	Seminar paper and report students present within lectures and exercises, which are evaluated and participates in the final grade of the course.	-	-
Oral exam	Students who pass a written exam are being asked questions from different parts of the entire course content.	examination deadlines	-



Multipurpose trails in urban and protected areas

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Categorize the types of trails and present their purpose and assess the need to establish clear norms and regulations regarding all types of trails.	Final Exam	A1, B2, B11
Compare different types of trails and recommend methods of conversion into multi-purpose trails and connect the needs of individual regions with the planning of multi-purpose trails.	Final Exam	A1, B2, B11
Plan the development of conceptual designs of multi-purpose trails and explain the need to collect field data on relief features in the area of the planned fitting of multi-purpose trails.	Final Exam	A1, B2, B11
Demonstrate the application of new methods and measuring devices and discuss their applicability in the collection of field data. Describe the methods of collecting field data for the preparation of the necessary project documentation.	Final Exam	A1, B2, B11
Connect the possibilities of computer programs with the needs of visualizing the project task space, suggest the use of different types of local construction materials for the construction of trails and identify the need for different categories of trails, depending on the perceived needs of users and in accordance with field conditions.	Final Exam	A1, B2, B11
Recognize the needs of users for a particular category of trails, present the existing methods of preserving certain categories of trails and analyse the current state of the trail network and critically judge the qualitative-quantitative parameters.	Final Exam	A1, B2, B11
Identify the need to build a particular type of trail, describe the need to rationalize costs through conversion into multi-purpose trails and provide places for planning new trails	Final Exam	A1, B2, B11
Discuss potential ways of informing users, show the importance of different types of trails from the recreational-sociological aspect, identify problems related to the lack of specific trails and finally talk about the importance of converting certain categories of trails into multi-purpose trails.	Final Exam	A1, B2, B11
Distinguish the needs of users for different categories of trails, assess the use of new techniques and construction materials for multi-purpose trails and identify areas where it is necessary to repurpose existing trails.	Final Exam	A1, B2, B11
Explain the course of events leading to dysfunctional trails. Present the possibilities of making trail maps by categories and by complexity, list potential technical solutions in the conversion of existing trails and finally discuss the justification of investment and finding new sources of funding needed for the conversion of trails.	Final Exam	A1, B2, B11



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	-	-	-	15	0	0.5
Exercises	-	-	-	15	0	0.5
Final exam (ZI)	100%	60-70% 71-80% 81-90% 91-100%	sufficient (2) good (3) very good (4) excellent (5)	0	30	1
TOTAL	100%			30	30	30

Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Tracking elements	Description	Deadline	Compensation
Lectures	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 20 % of direct teaching hours.	semester (15 hours of direct teaching)	-
Exercises	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 10 % of direct teaching hours.	semester (15 hours of direct teaching)	-
Written exam	Exams can be taken by students who regularly attended lectures. The written exam is evaluated and participates in the final grade of the course.	examination deadlines	-
Oral exam	Students who pass a written exam are being asked questions from different parts of the entire course content.	examination deadlines	-



Environmental chemistry

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
1. Define Environment and a subject of research in the Environmental science.		
2. Define atmosphere, geosphere and hydrosphere		
3. Establish a relation between chemical phenomena in the atmosphere, geosphere and hydrosphere with the chemistry science knowledge	3 partial written exams;	A2, B2, B13, D1
4. Distinguish naturally balanced chemical phenomena in the environment from those anthropogenically influenced or induced	integral written exam	
5. List and define the types and most prominent examples of hazardous waste		
6. List the toxic ('toxicological') properties of selected inorganic and organic substances.		



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	-		-	30	30	2
Exercises	-	-	-	-	-	-
Partial exams	100%	51-60	Sufficient (2)	3	15	1
		61-80	Good (3)			
		81-90	Very good (4)			
		91-100	Excellent (5)			
Exam	100%	51-60	Sufficient (2)	3		
		61-80	Good (3)			
		81-90	Very good (4)			
		91-100	Excellent (5)			
TOTAL	100%			30	45	3



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Tracking elements	Description	Deadline	Compensation
Lectures	Attendance of students is regularly recorded at classes (lectures). A student can miss a maximum of 2 hours of class during a semester.		-
3 partial exams	During classes, predictably in regular class times, students write three partial exams each with a maximum of 20 objective-type tasks. In order to pass the exam successfully, it is necessary to achieve > 50% of points on each. Students who have achieved the above-mentioned success in all three partial exams are entitled to the final grade in the course. If they want, they can take the oral exam.	During the lectures	-
Written exam	Students who have attended classes regularly can take the exam. The written part of the exam consists of a maximum of 60 objective-type tasks. To pass the exam successfully, it is necessary to achieve > 50% of points.	Exam terms	-
Oral exam	The oral part of the exam is taken by students who have passed the written part of the exam.	Exam terms	-



Selection and use of ornamental trees and shrubs in the landscape design

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Categorize ornamental woody plants according to morphological and biological features important for landscape design.	Final Exam	B5, B13
Categorize ornamental woody plants according to their possible application in landscape design	Final Exam	B5, B13
Categorize ornamental woody plants according to the negative effects they have in landscape design.	Final Exam	B5, B13
Use aesthetic, biological and ecological criteria for plant selection.	Final Exam	B5, B13
Narrow the selection of plants based on relevant criteria.	Final Exam	B5, B13
Narrow down the selection to aesthetically acceptable and environmentally sustainable plants that are realistically available.	Final Exam	B5, B13
Assess the applicability of ornamental woody plants according to the characteristics and conditions of the space.	Final Exam	B5, B13
Assess the applicability of ornamental woody plants according to project requirements.	Final Exam	B5, B13

Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	-	-	-	30	0	0.5
Final exam (ZI)	100%	60-70% 71-80% 81-90% 91-100%	sufficient (2) good (3) very good (4) excellent (5)	0	30	1.5
TOTAL	100%			30	30	2



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Tracking elements	Description	Deadline	Compensation
Lectures	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 20 % of direct teaching hours.	semester (30 hours of direct teaching)	-
Written exam	Exams can be taken by students who regularly attended lectures. The written exam is evaluated and participates in the final grade of the course.	examination deadlines	-
Oral exam	Students who pass a written exam are being asked questions from different parts of the entire course content.	examination deadlines	-



Rare and protected autochthonous woody plants

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Define and explain the biological properties and morphological characteristics of genera of rare and protected autochthonous woody species;	Final Exam	B10, B13
Identify and describe rare and protected autochthonous woody species by habit, leaves, flowers and fruits;	Final Exam	B10, B13
Use keys to determine rare and protected autochthonous woody species;	Final Exam	B10, B13
Group rare and protected autochthonous woody species according to biological properties, morphological characteristics, range and ecological importance.	Final Exam	B10, B13

Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	-	-	-	15	0	0.5
Exercises	-	-	-	15	0	0.5
Final exam (ZI)	100%	60-70% 71-80% 81-90% 91-100%	sufficient (2) good (3) very good (4) excellent (5)	0	30	1
TOTAL	100%			30	30	30



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Tracking elements	Description	Deadline	Compensation
Lectures	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 20 % of direct teaching hours.	semester (15 hours of direct teaching)	-
Exercises	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 10 % of direct teaching hours.	semester (15 hours of direct teaching)	-
Written exam	Exams can be taken by students who regularly attended lectures. The written exam is evaluated and participates in the final grade of the course.	examination deadlines	-
Oral exam	Students who pass a written exam are being asked questions from different parts of the entire course content.	examination deadlines	-



Collection and processing of 3D data

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Analyze the possibility of applying 3D data.	Final Exam	A1, B10, B13, B14, D4
Improve skills in 3D data manipulation.	Final Exam	A1, B10, B13, B14, D4
Think critically about the use of 3D data.	Final Exam	A1, B10, B13, B14, D4
Apply knowledge of how to collect and process 3D data.	Final Exam	A1, B10, B13, B14, D4

Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	-	-	-	30	0	0.5
Final exam (ZI)	100%	60-70% 71-80% 81-90% 91-100%	sufficient (2) good (3) very good (4) excellent (5)	0	30	1.5
TOTAL	100%			30	30	2

Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Tracking elements	Description	Deadline	Compensation
Lectures	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 20 % of direct teaching hours.	semester (30 hours of direct teaching)	-
Oral exam	Students are being asked questions from different parts of the entire course content.	examination deadlines	-



Remediation of degraded land

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Identify the most important forms of land degradation. Valorize the influence of soil degradation and his role in lands degradation. Recognize the relative relationships of sensitivity, vulnerability, and recoverability of soils and lands. Present the most suitable remediation methods for a specific case.	partial examination, full examination	A2
To predict the development of erosion processes. Recommend appropriate preventative anti-erosion measures. Establish measures for remediation of eroded lands.	partial examination, full examination	B2
Select and apply the corresponding recovery methods for acidity or alkalinity soils.	partial examination, full examination	B4, B7
Select and apply the corresponding remediation methods for contaminated soils. Evaluate the engagement of the company authorized to implement remediation measures of lands. Establish monitoring and evaluate the effects of remediation of the contaminated soil.	partial examination, full examination	B4, B7
Analyze the specifics of surface mining for the apply of remediation measures. Select corresponding soil remediation method. Develop and / or participate in the development of a remediation project. Evaluate the implementation of remediation in terms of the application of technical and biological measures.	partial examination, full examination	B4, B7
Determine a degradation processes as a result of petroleum mining. Preventive measures for the progression of degradation. Conclude on the proportions of degradation and design of the optimal remediation method.	partial examination, full examination	B4, B7
The landfill classification. Recommend the optimal method for remediation a landfill. Appropriate control measures for air, soil and water.	partial examination, full examination	B4, B7, C2
Create principles for selecting plant species for biological remediation. Select plant species for a degraded land remediation project. Predict and evaluate the processes of biological habitat remediation. Evaluate the effects of biological remediation.	partial examination, full examination	B4, B7
Assess the nature of forest habitat degradation. Biological remediation of fire site. Create a plan for the biological remediation of forest land.	partial examination, full examination	B4, B14
Evaluate the causes of individual or massive drying of trees in the stand. Appropriate technical and biological measures of land remediation.	partial examination, full examination	B4, B14



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures (L)		-	-	30	15	1,5
Exercises (E)		-	-	15	15	1
Field courses (FC)		-	-	16	5	0,7
Exam (E)		50-60 %	Sufficient (2)	6	78	2,8
		61-75 %	Good (3)			
		76-90 %	Very good (4)			
		91-100%	Excellent (5)			
TOTAL				67	113	5



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Evaluation elements	Description	Deadline	Compensation
Lectures (L)	On the lectures is checked the students presence. The student can justifiably be absent with up to 30% of teaching hours (5 lectures).	Semester (30 hours of direct teaching)	-
Exercises (E)	Exercises are auditoria and are maintained in the laboratory and classroom.	According syllabus and agreement with the students	In the case of a justified reason, the student draws up absence from the particular exercise term
Field courses (FC)	Field course is performed as complex field course, and the terms are published at the beginning of the semester.	Second half of the semester.	-
Partial exam (PE)	Students can take the exam in two parts (partial). The first part takes place after ~ 50% of theoretical teaching, and the term is agreed with the students. The exam consists of a written and oral part (the written part of the exam must be passed for oral instruction), and it is about 50% of the subjects provided by the theoretical program. Partial exams can be accessed by students who have no more than one absence from the lectures. Those students who take the first partial exam will also take the second part of the exam on some of the regular test terms by the end of the current academic year. The arithmetic mean of the two grades represents the grade of the exam that) gives the final grade	Agreement with the students in second half of the semester.	
Full exam (FE)	Students who have fulfilled their obligations in relation to lectures, exercises and field courses can access the regular exam. Examination of the entire program (realized through theoretical lectures, exercises and field courses) is examined on the exam. Students on exam (pre-printed questions) fit the questions asked in the form of rounding and written answers. A written exam is a condition for access to an oral exam, when gets a final grade.	Published test deadlines	-



Spatial analysis and valorisation

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Pronounce the definition of spatial analysis. Distinguish ordinary from spatial information. Describe and explain sources of spatial data. Recognize and apply types and forms of spatial data. Create spatial databases.	Performing exercises in a computer classroom, midterm exam, comprehensive exam	A1, D4
Describe and explain models of spatial data. Carry out the procedure georeferencing. Link thematic and geometric data. Explain and carry out interpolation of thematic variables.	Performing exercises in a computer classroom, midterm exam, comprehensive exam	A1, B10, B14, D4
Pronounce the definition of a digital relief model. Explain the ways of creating and editing of DEM data. Carry out a vectorization process of contour lines. Create DEM. Show and compare DEM visualization methods	Performing exercises in a computer classroom, midterm exam, comprehensive exam	A1, B10, B14, D4
Generate new variables based on the DEM. Show the creation of different raster layers based on the DEM. Present and explain terrain categorization using DEM. Create a digital orthophoto (DOP). Interpret and explain the data obtained from DEM and DOP	Performing exercises in a computer classroom, midterm exam, comprehensive exam	A1, B10, B13, B14, D4
Compare and describe the analysis of vector and raster data. Collect data and show data analysis (overlay analysis, operations on location/distance, network analysis, thematic mapping). Creating queries into built database. Compare and describe the analysis of vector and raster data. Collect data and show data analysis (overlay analysis, operations on location/distance, network analysis, thematic mapping). Creating queries into built database	Performing exercises in a computer classroom, midterm exam, comprehensive exam	A1, B10, B13, B14, D4
Explain fragmentary statistics. Calculate the area and perimeter of polygons, distance, correlation and distance of the same polygons. Analyse isolated polygons with aim of determining the homogeneity and / or heterogeneity of the studied area	Performing exercises in a computer classroom, midterm exam, comprehensive exam	A1, B10, B13, B14, D4
Distinguish models for determining and quantifying spatial elements of land use, land cover and habitat. Classify results of image interpretations. Analyse the classification results and overlap them with other raster and vector content. Explain the significance of spatial analysis in the evaluation of urban and protected areas	Performing exercises in a computer classroom, midterm exam, comprehensive exam	A1, B10, B13, B14, D4



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures (L)	-	-	-	30	0	1
Exercises (E)	-			15	7,5	0,75
Midterm exam (ME)	25%	60-70%	Sufficient (2)		22,5	0,75
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
Comprehensive exam (CE)	75%	60-70%	Sufficient (2)	3	42	1,5
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
TOTAL	100%	(MEx25 + CEx75)/100		48	72	4



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Evaluation elements	Description	Deadline	Compensation
Lectures	On the teaching is checked and recorded the presence of students. The student can justifiably absent from the highest 20% of hours of direct teaching (3 lectures).	semester (30 hours of direct lecturer)	-
Exercises	Exercises are held in a computer classroom. Each student is doing individual tasks. The accuracy, precision, regularity, and engagement on the exercises are evaluated. 2 absences from exercises are allowed with the additional preparation of the seminar work.	In accordance with the syllabus and agreed terms directly with the students.	The student does the absence of a particular term exercise
Midterm exam	A compulsory midterm exam is laid within the course. The term is agreed with the students. The midterm exam can be accessed by students who have been reviewed and had correct individual task. A passed midterm exam is a condition for students to get a signature and to go to the oral exam. The midterm exam is repeated during the academic year, according to the published schedule of exams.	Eight days before each test deadline, according to the published schedule.	-
Regular examination deadlines	All students who have fulfilled their obligations in relation to lectures and exercises and passed the midterm exam are eligible to attend a regular exam period. On exam checks knowledge of the entire program (implemented through theoretical lectures and exercises). A passed midterm examination is a requirement for an oral exam, and grade of a midterm examination is part of the final grade.	Published examination deadlines.	-



Ecotourism

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
To present sustainable tourism development and basics of touristic policy (specific tourism forms, factors and sustainable development principles, environmental economics and environmental management, sustainable tourism, UNCED agenda 21)	seminar papers, final exam	A1
To analyse place and role of the tourism in national economy, correlation between tourism, traffic and inhabitants (tourism as a set of complementary products and services, direct and indirect economic effect, capital redistribution, the influence of inhabitants on environment and development of ecological conscious in tourism).	seminar papers, final exam	B3
To define characteristics of tourism resources and markets (specifics and elements of touristic market, development trends, main inbound and outbound markets, touristic resources classification).	seminar papers, final exam	B2
Valorise environmental goods in tourism, to analyse the role of forestry in tourism (economic evaluation of the space in tourism, evaluation goals and methods, use value, contingent value ecosystem services, environmental goods and services, wood and non-wood forest products, eco-agro tourism as a driver of sustainable tourism).	seminar papers, final exam	B13



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures (L)	10%	Regularly lessons attendance and activity	-	30	0	1
Field trip (F)	10%	Participation and regularly submission	-	8	0	1
Exercises and seminar (presentation form) E	30%	Partly disordered and incomprehensible, with major corrections and on time	Sufficient (2)	15	30	1
		Proper, readable, with major corrections and on time	Good (3)			
		Proper, readable, with minor corrections and on time	Very good (4)			
		Proper, readable, accurate and on time	Excellent (5)			
Exam (E)	50%	60-70%	Sufficient (2)		45	1
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
TOTAL	100%	(E₁x15+E₂x15 + E_x70)/100		53	75	4



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Evaluation elements	Description	Deadline	Compensation
Attendance of lectures and exercise	Checking the attendance of students on lectures. Student can miss the lectures justifies no more than 15%	semester (45 hours of direct lecturer)	-
Exercises and final presentation of seminar work	<p>During the semester Students are performing two seminars. The first part consists 4 exercises where development of ecotourism cases will be analysed (2 hours per segment: literature introduction, data analyse, presentation of results, comparison with other studies).</p> <p>The second work consists 3 exercises. Segments are: introduction with research methods, implementation of evaluation methods, benefits and deficiency of methods, implementation of method on selected case.</p> <p>Instructions for the seminar papers are provided by the lecturer, and are entirely available on the MERLIN web site.</p>	<p>1st seminar until January 15th</p> <p>2nd seminar until June 15th</p>	
Exam	Students who submit the exercises and do both seminar works have the right to access the exam. Exercises are not evaluated and have no impact on the final assessment. Seminar papers are evaluated and have an impact on the final assessment.	Exam terms	



Statistical Methods and Modelling in Forestry

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
<p>1. Design survey questionnaire and determine the sample size (composing the questionnaire, creating and organizing database, sampling methods, determination of sample size for desired precision of estimate – mean and proportion, determination of sample size for binomial distribution)</p> <p>2. Explain comparison of two frequency distributions (chi-square test)</p> <p>3. Present correlation analysis (define correlation in population and estimate correlation coefficient; testing statistical significance of correlation coefficient based on random sample)</p> <p>4. Formulate analysis of variance: comparing more than two population means; parametric (ANOVA) and non-parametric test (Kruskal-Wallis), defining multiple comparison (post-hoc) test of difference between populations; graphical presentation using statistical software</p> <p>5. Present regression analysis: define and classify types of regression, model building methods, indicators and tests for model goodness of fit, testing statistical significance of estimated parameters, graphical presentation using statistical software</p>	<p>Computer exercises, partial exams, written and oral final exam</p>	<p>A1, B13, D1</p>



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures (L)	-	-	-	15	15	1
Exercises (E)	-	-	-	30	30	2
Partial exam (PE)	100%	65-74	Sufficient (2)	4	26	1
		75-84	Good (3)			
		85-94	Very good (4)			
		95-100	Excellent (5)			
Final exam (FE)	100%	60-70	Sufficient (2)	3	-	-
		71-80	Good (3)			
		81-90	Very good (4)			
		91-100	Excellent (5)			
UKUPNO	100%			52	71	4

Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Evaluation elements	Description	Deadline	Compensation
Attendance of lectures and exercises	Attendance is checked for all students during the semester. Each student is allowed to be absent up to 4 hours of lectures and 4 hours of exercises.		-
Partial exam	Two partial exams are carried out, each with 5 assignments and resulting maximum 100 (2*50) points. Minimum 65 points (20 points per exam) can substitute the final exam.	During semester	-
Written exam	Students that meet attendance and exercise assignment criteria can access the written exam. Written part consists of 5 assignments making maximum total 100 points.	Exam terms	-
Oral exam	Students that pass written part can access the oral exam.	Exam terms	-



Conservation of genetic diversity of forest trees

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Interpret the genetic structure and conservation strategy (importance of conservation of genetic resources and sustainable management in forest biodiversity, evolutionary genetics and phenotypic, morphological and physiological variability of forest trees).	Preliminary exam, full exam	A1, B2, B3, B4, B13, D1
Present in situ methods of conservation of genetic diversity of forest trees (selection of target species, management and monitoring of genetic resources, number of required populations for gene banks).	Preliminary exam, full exam	A1, B2, B3, B4, B13, D1
Present ex situ methods of conservation of genetic diversity of forest trees (sample size, preservation of genetic material, method of multiple population breeding, the concept of the least sustainable population size).	Preliminary exam, full exam	A1, B2, B3, B4, B13, D1
Interpret the restoration of the genetic potential of forest trees (indicators of genetic erosion of the species, dangers to genetic diversity, genetic pollution, conservation of genetic diversity in forestry practice and conservation models in forest trees).	Preliminary exam, full exam	A1, B2, B3, B4, B13, D1



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures (L)		-	-	30		1
Exercises (E)		-	-	30	30	2
Field courses (FC)		-	-	16		0.5
Exam (E)		50-60 %	Sufficient (2)	-	45	1.5
		61-75 %	Good (3)			
		76-90 %	Very good (4)			
		91-100%	Excellent (5)			
TOTAL				67	76	75

Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Evaluation elements	Description	Deadline	Compensation
Lectures (L)	On the lectures is checked the students presence. The student can justifiably be absent with up to 20 % of teaching hours.	Semester (30 hours of direct teaching)	-
Exercises (E)	The exercises are held in the lecture hall and the laboratory. A student can be excused from a maximum of 10% of classes.	According to syllabus and agreement with the students	-
Field courses (FC)	Field courses are mandatory.	Semester (16 hours of direct teaching)	-
Full exam (FE)	The exam consists of a written and an oral part.	Exam terms	-



Preparation and management of ecological projects

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Explain the role and importance of projects to achieve general and specific objectives	Knowledge test, final exam	B5, B9, C1, C3, C4, C5, D1
Explain the individual phases of the project cycle	Knowledge test, final exam	B5, B9, C1, C3, C4, C5, D1
Apply project's tools: stakeholder analysis, SWOT analysis, 'problem tree' and analysis of project-related objectives	Knowledge test, final exam	B5, B9, C1, C3, C4, C5, D1
Define the scheme of project organization with work plan and project time schedule	Knowledge test, final exam	B5, B9, C1, C3, C4, C5, D1
List the key elements for assessing the cost-effectiveness of the project	Knowledge test, final exam	B5, B9, C1, C3, C4, C5, D1
Identify areas of possible project application by creating a list of project ideas	Knowledge test, final exam	B5, B9, C1, C3, C4, C5, D1
List the main EU funds through which environmental projects are financed and explain the specifics (criteria and conditions) of funding	Knowledge test, final exam	B5, B9, C1, C3, C4, C5, D1
Make a project proposal, according to the standard project application form, for the environmental education project	Knowledge test, final exam	B5, B9, C1, C3, C4, C5, D1
Compile an indicative project budget with a breakdown of total costs by basic groups of expenditures	Knowledge test, final exam	B5, B9, C1, C3, C4, C5, D1



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures (L)				20	0	0,5
Write a project - seminar paper (SP)	30%	Incompletely structured with significant corrections and on time	Sufficient (2)	8		0,5
		Correctly structured, with significant corrections and on time	Good (3)			
		Complete, clearly structured with minor corrections and on time	Very good (4)			
		Inventive, fully structured, accurate and on time	Excellent (5)			
Final exam (FE)	70%	60-70%	Sufficient (2)	2	45	1,0
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
TOTAL	100%	(FEx70+SPx30)/100		30	45	2



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Evaluation elements	Description	Deadline	Compensation
Attendance of lectures and exercises	The attendance is checked and recorded. A student may justifiably be absent with a maximum of 15% of direct teaching hours.	semester (20 hours of direct lecturer)	-
Write a project - seminar paper (SP)	Project assignments (seminar papers) are prepared in accordance with approved project ideas in connection with the processing of thematic units and the analysis of examples in class.	according to the agreed time	
Written exam	The exam can be taken by students who have met the condition of attendance at lectures and a positively evaluated seminar paper. Students answer the questions on the pre-made printed exam, circle the correct answers, complete the key terms within the sentence. The written exam is graded and participates in the final grade of the course	exam terms	-
Oral exam	Students who pass a written exam teacher asking questions from different parts of program content. Final grade of subject is obtained according to the formula. (FEx70+SPx30)/100		



Protected nature parts

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
To present the endangerment of flora and fauna, overview of endangered taxa in the Republic of Croatia (endangerment categories, methods and assessment criteria, legal protection, causes of endangerment, implementation of protection measures, endangered taxa, distribution, habitat)	Partial exam , seminars, Final exam	B1, B2, B3
To identify the causes of endangerment of flora and habitats and identify disadvantages and negative impacts on plant diversity.	Partial exam, seminars, Final exam	B1, B2, B3
To analyze protected areas within the European ecological network Natura 2000, legislative framework in nature protection, development of expert bases in nature protection and analysis of natural values	Partial exam, seminars, Final exam	B1, B2, B3
To identify spatial categories of protection, national parks, nature parks (historical development, spatial plans, zoning, management plans, financing).	Partial exam, seminars, Final exam	B1, B2, B3



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures (L)				26	0	0,5
Seminar (S)	20%	50-70%	Sufficient (2)	2	10	0,5
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
Partial exam (P1)	40%	50-70%	Sufficient (2)	1	10	0,5
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
Partial exam (P2)	40%	50-70%	Sufficient (2)	1	10	0,5
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
TOTAL	100%	(Sx20 + P1x40 + P2x40)/100		15	30	30



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Evaluation elements	Description	Deadline	Compensation
Lectures	The attendance is checked and the attendance of the students is recorded. A student may justifiably be absent with a maximum of 20 % of direct teaching hours.	semester (30 hours of direct lecturer)	
Seminar work	Seminar papers are produced in accordance with the assigned topics related to the analyses and interpretations of the teaching units in the exercises.		
Partial exams (P1 and P2)	Students will take the exam from the above mentioned thematic areas.	8. and 15. week	Students who do not attend the partial exams will approach the written and verbal part of the exam
Written exam	The exam is attended by students who have not passed the first and second partial exam. Students who have passed the first and second partial exam only access the verbal part of the exam. The students in the pre-printed exam answer the questions asked, round out the exact answers, describe the images. The written exam is evaluated and participates in the final assessment of the subject.	Exam terms	
Oral exam	Students who pass a written exam are asking questions from different parts of the program content. The final grade of the subject is obtained according to the formula: (Fex80+Sx20)/100		



Virgin forests and forest reserves

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Present the significance and role of virgin forests and forest reserves, ontogenetic development of virgin forests (importance and role of virgin forests and forest reserves, anthropogenic influence, phylogenetic development of virgin forests, approaches and methods of exploration of virgin forests and forest reserves, ontogenetic development of virgin forests, pioneer, transitional and final forests, Area of virgin forests in the world and the Republic of Croatia)	Seminar, Final exam	B3
Determine the structure and texture of the virgin forest (initial, optimal, terminal, selection and other phases and stages of the virgin forest, dynamics and stability of the virgin forest)	Seminar, Final exam	B3
Analyse the comparison of the virgin forests and the management forests (physical maturity, deadwood, dead and decomposing trees, decomposition of dead wood, regeneration, zoocenosis, use of forest knowledge in forest management, natural forests management, comparison of virgin forest and natural forest management)	Seminar, Final exam	B12



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures (L)	-	-	-	30	0	0,5
Designing seminar papers (SP)	30%	60-70%	Sufficient (2)	0	10	0,5
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
Final exam (FE)	70%	60-70%	Sufficient (2)	0	30	1
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
TOTAL	100%	(Fex70 + SPx30)/100		30	40	2

Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Evaluation elements	Description	Deadline	Compensation
Attendance of lectures and exercises	The attendance is checked and the attendance of the students is recorded. A student may justifiably be absent with a maximum of 20 % of direct teaching hours.	semester (30 hours of direct lecturer)	-
Written seminar paper	The student prepares seminary work on the topic. The quality of the seminar work is evaluated.	15. week	
Written exam	Examinations can be attended by students who have completed exercises and field teaching. The students in the printed exam answer the questions asked. The written exam is evaluated and participates in the final grade of the subject.	Exam terms	
Oral exam	Students who pass a written exam are asking questions from different parts of the program content.	Exam terms	



Organizational culture

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Present the basics of organizational culture (elements of organizational culture, organizational climate, classification and typology, design and maintenance of organizational culture, role and functions, importance of organizational culture in forestry).	Seminar, Final Exam	B2, B12, C1, C3
Evaluate organizational culture in the forestry situation and environment context (ethical components, influence of information and communication technologies, contemporary trends, research and features of organizational culture in forestry)	Seminar, Final Exam	B2, B12, C1, C3
Ensure measurement and management of organizational culture (methods and models, influence of managers, best known theories and models of management and managerial styles, subculture in business organization, changes in organizational culture)	Seminar, Final Exam	B2, B12, C1, C3
Compare the organizational culture and effectiveness of the organization (the impact of culture on organizational success and efficiency, the relationship between culture and business strategy, case studies and examples of best practice)	Seminar, Final Exam	B2, B12, C1, C3

Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	-	-	-	30	0	0.5
Seminar (S)	20%	-	-		15	0.5
Final exam (FE)	80%	60-70% 71-80% 81-90% 91-100%	sufficient (2) good (3) very good (4) excellent (5)	0	30	1
TOTAL	100%	(Sx20+FEx80)/100		30	45	2



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Tracking elements	Description	Deadline	Compensation
Lectures	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 20 % of direct teaching hours.	semester (30 hours of direct teaching)	-
Seminar	Students write and present their seminar work related to the given topic/problem	semester	
Written exam	Exams can be taken by students who regularly attended lectures and have prepared their seminar work. The written exam is evaluated and participates in the final grade of the course.	examination deadlines	-
Oral exam	Students who pass a written exam are being asked questions from different parts of the entire course content.	examination deadlines	-



Utilization of forest biomass

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Establish a production system according to the potential of wood biomass of certain stands and biomass from urban areas by introducing new technologies	Seminar Paper, Final Exam	B11, C2
Organize collection-logistic centres for storing and selling certain quantities of solid biofuels according to the basic features of the product declaration	Seminar Paper, Final Exam	B11, C2
Valorise solid biofuel based on physical and chemical properties and use.	Seminar Paper, Final Exam	B11, C2

Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	-	-	-	15	0	0.5
Exercises	-	-	-	15	0	0.5
Seminar paper (S)	25%		sufficient (2) good (3) very good (4) excellent (5)	0	10	0.25
Final exam (ZI)	75%		sufficient (2) good (3) very good (4) excellent (5)	0	20	0.75
TOTAL	100%		$(S \times 25 + ZI \times 75) / 100$	30	30	2



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Tracking elements	Description	Deadline	Compensation
Lectures	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 20 % of direct teaching hours.	semester (15 hours of direct teaching)	-
Exercises	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 10 % of direct teaching hours.	semester (15 hours of direct teaching)	-
Seminar paper	Students prepare a seminar paper on the subject matter. The seminar work is evaluated and participates in the final evaluation of the course.	15 th week	-
Oral exam	Students are being asked questions from different parts of the entire course content.	examination deadlines	-



Mobile applications in forestry

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Apply online download and installation of specialized applications in Android, iOS and Windows Mobile operating system.	Final Exam	B12, B14
Connect a database in CAD and GIS tools on a computer with data from a mobile device	Final Exam	B12, B14
Identify applicable functions for work in a particular area of forestry, urban forestry and protected areas.	Final Exam	B12, B14
Develop their own technique of finding, analyzing and testing applicable forestry applications.	Final Exam	B12, B14

Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	-	-	-	15	0	0.5
Exercises	-	-	-	15	0	0.5
Final exam (ZI)	100%	60-70% 71-80% 81-90% 91-100%	sufficient (2) good (3) very good (4) excellent (5)	0	30	1
TOTAL	100%			30	30	30



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Tracking elements	Description	Deadline	Compensation
Lectures	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 20 % of direct teaching hours.	semester (15 hours of direct teaching)	-
Exercises	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 10 % of direct teaching hours.	semester (15 hours of direct teaching)	-
Written exam	Exams can be taken by students who regularly attended lectures. The written exam is evaluated and participates in the final grade of the course.	examination deadlines	-
Oral exam	Students who pass a written exam are being asked questions from different parts of the entire course content.	examination deadlines	-



Species distribution models

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
To find sources of the input data, to collect, process and prepare required input data for species distributions models (species occurrence data and environmental data)	Final Exam, Seminar	A1, B3, B8, B10, B13, D1, D4, D5
To independently build step by step simple species distributions models	Final Exam, Seminar	A1, B3, B8, B10, B13, D1, D4, D5
To be able to evaluate and interpret the results of the species distributions models	Final Exam, Seminar	A1, B3, B8, B10, B13, D1, D4, D5
To project species distributions models in space and time	Final Exam, Seminar	A1, B3, B8, B10, B13, D1, D4, D5
To present results of the models as species distribution maps	Final Exam, Seminar	A1, B3, B8, B10, B13, D1, D4, D5
To be able to correctly apply and use species distributions models as a tool for applied and basic research in a variety of questions and studies in the Nature and Environmental Protection Sector	Final Exam	A1, B3, B8, B10, B13, D1, D4, D5



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	-	-	-	14	0	0.5
Exercises	-	-	-	15	0	0.5
Seminar (S)	50%	<ul style="list-style-type: none"> - Seminar delivered on time - In addition to prior, student follows the given topic and seminar is written clearly - In addition to prior, student gives an oral presentation of the seminar - Seminar content reflects student's deep understanding of the topic 	sufficient (2) good (3) very good (4) excellent (5)	1	15	0.5
Final exam (ZI)	50%	60-70% 71-80% 81-90% 91-100%	sufficient (2) good (3) very good (4) excellent (5)	0	15	0.5
TOTAL	100%			30	30	2

Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Tracking elements	Description	Deadline	Compensation
Lectures	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 20 % of direct teaching hours.	semester (14 hours of direct teaching)	-
Exercises	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 10 % of direct teaching hours.	semester (15 hours of direct teaching)	-
Seminar	Students who regularly attended lectures and exercises prepare individual student seminars in which they present an agreed topic. Quality and the grade of the seminar contribute to the final grade.	semester - according to defined term	
Written final exam	Final exams can be taken by students who regularly attended lectures, exercises and have delivered and/or presented their seminar. The written exam is evaluated and participates in the final grade of the course.	examination deadlines	-



Safety and organization of work in urban and protected forests

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Analyze and implement in practice the organization of safe work on trees in urban areas (selection of correct work techniques, rules of safe work at height, preparation of site development plan).	Final Exam	A1, B11, B12
Develop an action plan for the implementation of a risk management model on pedestrian infrastructure for a specific protected area (risk inspection protocol, safety recommendations for zones and / or identified risk points).	Final Exam	A1, B11, B12
Develop organizational dynamics of performing works on trees and parks in urban areas within the annual management plan.	Final Exam	A1, B11, B12

Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	-	-	-	15	0	0.5
Exercises	-	-	-	14	0	0.5
Partial exam from Legislation (K)	15%	60-70% 71-80% 81-90% 91-100%	sufficient (2) good (3) very good (4) excellent (5)	1	5	0.15
Final exam (ZI)	100%	60-70% 71-80% 81-90% 91-100%	sufficient (2) good (3) very good (4) excellent (5)	0	30	0.85
TOTAL	100%			30	35	2



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Tracking elements	Description	Deadline	Compensation
Lectures	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 20 % of direct teaching hours.	semester (15 hours of direct teaching)	-
Exercises	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 10 % of direct teaching hours.	semester (14 hours of direct teaching)	Exceptionally, in the case of a justified reason, the student makes up the absence from a particular exercise
Partial exam	Students in the pre-printed exam answer questions answered, round off accurate answers and supplement the words within the sentence. The partial exam is evaluated and participates in the final grade of the subject Students who pass the partial exam can access the final exam	10. week	-
Written exam	Exams can be taken by students who regularly attended lectures. The written exam is evaluated and participates in the final grade of the course.	examination deadlines	-
Oral exam	Students who pass a written exam are being asked questions from different parts of the entire course content.	examination deadlines	-



Forest roads in protected areas

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Connect the basic phases and sub-phases of establishing an optimal forest roads network in protected forest ecosystems.	Final Exam	B11
Interpret and apply primary and secondary legislation used in the phases of planning, design, construction and maintenance of forest roads in protected forest ecosystems.	Final Exam	B11
Understand and know how to use technical documentation prepared in the phases of planning and design of forest roads in protected forest ecosystems.	Final Exam	B11
Compare technical documentation of forest roads construction and maintenance in protected forest ecosystems with field construction and maintenance works.	Final Exam	B11
Decision making on compatibility of the performed construction and maintenance works with the technical documentation.	Final Exam	B11
Documentation understanding that accompanies the phases of construction and maintenance of forest roads in protected forest ecosystems.	Final Exam	B11



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	-	-	-	15	0	0.5
Exercises (E)	10%	Partly disordered and incomprehensible, with major corrections and within time	Sufficient (2)	15	0	0.5
		Neat, legible, with major corrections and in time	Good (3)			
		Neat, legible, with minor corrections and within time	Very good (4)			
		Neat, legible, accurate and within time	Excellent (5)			
Writing seminar (S)	10%	-	-	0	7.5	0.25
Final exam (FE)	80%	60-70% 71-80% 81-90% 91-100%	sufficient (2) good (3) very good (4) excellent (5)	0	22.5	0.75
TOTAL	100%	(Ex10 + Sx10 + FEx80)/100		30	30	30



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Tracking elements	Description	Deadline	Compensation
Lectures	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 20 % of direct teaching hours.	semester (15 hours of direct teaching)	-
Exercises	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 10 % of direct teaching hours.	semester (15 hours of direct teaching)	-
Seminar	Students assigned in groups prepare and present their seminar work related to the relevant topic for forest roads in protected areas	semester	-
Written exam	Exams can be taken by students who regularly attended lectures. The written exam is evaluated and participates in the final grade of the course.	examination deadlines	-
Oral exam	Students who pass a written exam are being asked questions from different parts of the entire course content.	examination deadlines	-



Tree sanitation and conservation

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Present significance of tree sanitation and conservation	Final Exam	B1, B2, B3
Recommend treatments for different tree parts (root, trunk, crown) sanitation	Final Exam	B1, B2, B3
Describe tree crown cabling treatments	Final Exam	B1, B2, B3
Prepare expert report of tree sanitation and conservation	Final Exam	B1, B2, B3

Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	-	-	-	15	0	0.5
Exercises	-	-	-	15	0	0.5
Final exam (ZI)	100%	60-70% 71-80% 81-90% 91-100%	sufficient (2) good (3) very good (4) excellent (5)	0	30	1
TOTAL	100%			30	30	30



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Tracking elements	Description	Deadline	Compensation
Lectures	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 20 % of direct teaching hours.	semester (15 hours of direct teaching)	-
Exercises	The attendance of students is checked and recorded. A student may justifiably be absent with a maximum of 10 % of direct teaching hours.	semester (15 hours of direct teaching)	-
Written exam	Exams can be taken by students who regularly attended lectures. The written exam is evaluated and participates in the final grade of the course.	examination deadlines	-
Oral exam	Students who pass a written exam are being asked questions from different parts of the entire course content.	examination deadlines	-



Integrated forest protection in protected areas

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Analyse integrated protection of lowland forest ecosystems (emphasis is on problems in water supply, including both underground and precipitation water, and increased temperatures (global warming), anthropogenic influence and roles of disease causative agents and pests, where aforementioned factors are analysed individually and in synergy and make the foundation for integrative approach to protective measures of main tree species and whole ecosystems).	Seminar, final exam.	B9
Present integrated protection of forest ecosystems of common beech (abiotic and biotic factors which individually or in synergy influence or can influence on stability of common beech ecosystems, climate disturbances, and anthropogenic influence).	Seminar, final exam.	B9
Analyse integrated protection of forest ecosystems of silver fir (forests and protected natural objects of hill and mountain ecosystems, abiotic and biotic factors which individually or in synergy influence or can influence on stability of silver fir ecosystems, emphasis is on problems with climate disturbances, anthropogenic influence and roles of diseases and pests).	Seminar, final exam.	B9
Present integrated forest protection of Mediterranean ecosystems (forests and protected natural objects of Croatian Mediterranean, important biotic and abiotic factors which individually or in synergy influence or could influence on stability of forest ecosystems, emphasis is on problems with climate disturbances with special overview of drought and forest fire, and anthropogenic influence and roles of diseases and pests	Seminar, final exam.	B9



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures	-	-	-	30	0	1
Practical exercises (V)	-	-	-	15	0	0,5
Field classes and field class seminar (TN)	-	-	-	16	2	0,7
Seminar (S)	65%	-	-	0	35	1
Exam (PUI)	35%	60-70%	sufficient (2)	0	20	0,8
		71-80%	good (3)			
		81-90%	Very good (4)			
		91-100%	excellent (5)			
TOTAL	100%	(Kx20 + PUIx80)/100		61	57	4

Evaluation elements	Maximum points or Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Final exam* (ZI)		60-70% 71-80% 81-90% 91-100%	sufficient (2) good (3) very good (4) excellent (5)	0	135	3,5
TOTAL	100%	(ZIx100)/100				



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Evaluation elements	Description	Deadline	Compensation
Lectures + practical exercises	Students' attendance is checked and recorded. Students can be absent with justification from maximum 15 % of direct teaching	semester (45 direct teaching hours)	-
Completion of practical exercises	Students attend practical exercises in groups. Practical exercises are carried out orientated to recognition of pests and diseases of urban and forest trees and to protective measures.	semester (15 direct teaching hours)	In case of justified reason student can additionally compensate for the absence from the exercise.
Seminar (S)	Students present given units. Seminar is graded and taken into account for the final grade of this course.	From 3rd week	Students who presented seminar can take oral exam.
Oral exam	Students are asked questions relating to the different parts of the course content. The following formula is used to calculate the final grade for this course: Sx65+PUIx35/100		



Ecological Monitoring

Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Identify changes, disturbances and excesses events in forest ecosystems (functioning of forest ecosystems, stability and sustainability, changes, disturbances and degradation of forest ecosystems, causes and consequences of changes and disturbances in forest ecosystems, excesses events in nature, causes of excesses events in forests, time of occurrence, intensities, indicators of damage, consequences in forests, economic consequences)	tests of knowledge, oral exam	A1, B3, B7, B10, B13
Analyse monitoring of water, air and soil pollution in forests (reasons for monitoring water, air and soil in forests, water pollution, water forms in forest ecosystems, water quality, water quality indicators, methods of determining water status in forests and urban areas, equipment for determining, monitoring air quality and the condition of forest and urban soils)	tests of knowledge, oral exam	A1, B3, B7, B10, B13
Present monitoring of dynamics of hydrological conditions and climate in forests (forest hydrology, dynamics of waters in lowland forests, monitoring of precipitation, surface, flood, watercourses, groundwater, climate, weather, climatic phenomena, monitoring of climatic elements in forests and nurseries, processing and display of climate data)	tests of knowledge, oral exam	A1, B3, B7, B10, B13
Interpret the monitoring of biomass, phenophases and mycorrhiza in forest ecosystems (biomass plants, animals, microorganisms, stands, ecosystems), tree biomass, methods for determining the biomass of tree, phenology, description of phenophases, organization of monitoring of phenophases of forest trees, data processing using phenological database, phenological observations within ICP Forests, mycorrhiza, significance for plants)	tests of knowledge, oral exam	A1, B3, B7, B10, B13
Present the program of monitoring the damage of forest ecosystems (monitoring / habitat and stressors, ICP Forests, visual assessment of canopy condition, causes and consequences of tree disturbances, tree condition databases, regulations on tree condition assessment, forest soil condition assessment, meteorological monitoring parameters, ground vegetation, phenophase of forest trees, tree vitality, hierarchical method of tree vitality assessment based on morphological indicators, tree vitality indicators)	tests of knowledge, oral exam	A1, B3, B7, B10, B13
Analyze ecological equipment and regulations for monitoring the condition of forests (equipment and instruments for monitoring meteorological elements, regulations related to monitoring the condition of forests)	tests of knowledge, oral exam	A1, B3, B7, B10, B13



Methods of grading

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures (La) attendance	5%	100% 90% 80% 70%	Excellent (5) Very good (4) Good (3) Sufficient (2)	15	-	0,5
Exercises (Ea) attendance	5%	100% 90% 80%	Excellent (5) Very good (4) Good (3)	30	-	1
Field work (FWa) attendance	3%	100%	Excellent (5)	16	-	0,5
Writing exercises (E) and field practice report	30%	Partly disordered and incomprehensible, with major corrections and on time	Sufficient (2)	-	20	0,7
		In order, easy, with bigger corrections and on time	Good (3)			
		In order, easy, with minor corrections and on time	Very good (4)			
		In order, easy, accurate and timely	Excellent (5)			
Partial exam (PE)	30%	50-62%	Sufficient (2)	4	20	0,8
		63-76%	Good (3)			
		77-90%	Very good (4)			
		91-100%	Excellent (5)			
Oral exam (OE)	27%	50-62%	Sufficient (2)	0,5	15,5	0,5
		63-76%	Good (3)			
		77-90%	Very good (4)			
		91-100%	Excellent (5)			
TOTAL	100%	(Lax0,05)+(Eax0,05)+(FWax0,03)+(Ex0,3)+(PEx0,3)+(OEx0,27)		65,5	55,5	4



Detailed description of evaluation elements for lecturer, exercises, partial or final exams:

Evaluation elements	Description	Deadline	Compensation
Attendance of lectures and exercises	The attendance is checked and the attendance of the students is recorded. The student can reasonably be absent from a maximum of 30% lectures and 20% exercises and cannot be absent from the field work. Attendance is evaluated by grades 2-5, and this grade is taken when calculating the final grade of the subject.	semester (61 hours of direct lecturer)	Exceptionally, in the case of a justified reason the student should compensate for the lack of individual lectures or field work
Exercises and reports from the field work	Exercises are attended by groups. As part of the exercise is carried out 7 practical exercises. At the beginning of each exercise, students receive task templates and the layout of exercise reports in printed form. Estimated accuracy, neatness and regularity (exercise submitted on time). From each exercise, the student gets a grade and the average of all grades in the exercise is taken when calculating the final score from the subject.	In accordance with the agreed terms.	Exceptionally, in the case of a justified reason, the student draws the absence of the individual exercise.
Partial exam	Students can write two written tests during the semester according to personal choice (first on half of the semester and the second at the end of the semester). Students who score more than 50% of the correct answers from both tests do not write a final written test. Students who do not reach 50% correct answers from the written test are writing the final written test. All test scores are taken in the calculation of the final grade of the subject.	7. and 15. week in semester	Students who do not pass two written tests may take the final written exam.
Written exam	A written final test is written by all students who have not passed two partial written tests during the semester. In the final written test, students answer the questions from the entire material. All grades from the written tests participate in the calculation of the final grade of the subject.	Exam terms	The student has the right three times to go to the exam.
Oral exam	Students who pass a written test and who receive passive grades from exercises, and have passive grades from lectures, exercises, and field work attendance take the oral exam. Each student receives questions from the entire material during the oral exam. The final grade of the subject is obtained according to the percentage representation of each grade in the overall rating according to the formula: (Lax0,05)+(Eax0,05)+(FWax0,03)+(Ex0,3)+(PEx0,3)+(OEx0,27)	7. and 15. week in semester and exam terms	The student has the right three times to go to the exam