



**SVEUČILIŠTE U ZAGREBU, FAKULTET ŠUMARSTVA I DRVNE TEHNOLOGIJE**  
UNIVERSITY OF ZAGREB, FACULTY OF FORESTRY AND WOOD TECHNOLOGY

**Undergraduate study Wood technology**

# **Evaluation methods and criteria**

**Acad. year 2023/24.**



## **Learning outcomes of undergraduate study Wood Technology**

### **A General engineering competencies**

A1 Apply a physical approach of experimental observation and mathematical modelling, solve mathematically various research and practical problems, statistically process, present and analyse data, and reach conclusions based on analysed data

A2 Apply basic laws of physics that present the basis of wood technology, understand Newton's axioms and apply them to solve technical problems, explain phenomena in the field of electrical engineering, and make accurate and optimal use of electric energy

A3 Competently maintain, work with and use the possibilities of basic technical components

A4 Apply skills in solving practical issues in the business, either by control measurements, calculations or testing verifications

### **B Focused engineering competencies**

B1 Identify parts and shapes of trees, macroscopic, physical and chemical wood properties, identify and explain the anatomic structure of the xylem of wood-like plants, identify woodlike species based on different morphological characteristics, and apply theoretical and practical knowledge of commercially important indigenous and foreign species of wood and shrubbery

B2 Recognise and determine the most important types of xylophagous bacteria, insects, fungi and marine borers, and determine flaws on wood incurred due to their activity; learn the basic principles of wood protection based on physical, chemical and structural properties of wood, and apply basic procedures and methods for wood protection

B3 Apply knowledge about the mechanical properties of wood, mechanical properties arrangement within individual trees and group of trees, tree flaws and the influence of flaws on the mechanical properties of wood

B4 Apply technical knowledge for the purpose of mastering wood industry procedures and processes, means of work and material handling methods

B5 Organise transport of wood and wooden materials, calculate and adjust the capacities of means of transport with technological procedures, calculate and analyse energyconsumption, and recommend solutions for less complex wood and wooden material transport projects.

### **C Technological engineering competencies**

C1 Analyse the wood cutting process, select, optimally use and maintain primary process machinery, select machinery working regimes and tools for final wood processing, and recommend project assignments to special equipment manufacturers

C2 Recognise and assess sawmilling raw material and products, conduct the categorisation and measurements of sawmilling raw material and products, apply basic skills of wood sawmilling technology and techniques of log and board sawing, and identify factors of successful sawmilling wood processes

C3 Monitor and control processes of massive wood, veneer and wood particle drying, other special drying processes, and wood steaming



C4 Recognise particular types of veneer and wood panel, analyse the basic structural components of wood panels, explain the interdependency of structural components and technical properties of wood panels, monitor and control the manufacturing process in wood board factories, select and use wood panels with optimal properties

C5 Size constructions, define systems of construction compositions, as a prerequisite for product construction, define the basic construction documentation and develop it systematically, apply CAD systems in wood industry and 2D modelling with the help of AutoCAD

C6 Use wood gluing technology, select materials with optimal properties important for final processing, apply simpler technological methods in final wood processing

C7 Define the specifics of wood usage in construction, recommend adequate applications of a particular type of wood for building purposes, recommend the basic shape, physical and construction solutions, explain and ensure functional requirements, types and construction solutions for main product groups

C8 Recommend materials and procedures that are applied in the wood finishing process in the interior and the exterior, operate the wood finishing process starting from base preparation to the hardening of the material

#### D Organisational engineering competencies

D1 Plan and organise the time study, work rationalisation, and perform quality control in technological processes and on finished products, maintain supply, stock and logistic support optimization, plan and calculate the production, calculate basic business KPIs, write basic financial reports, recognise types of expenses

D2 Perform wood industry specific calculations, define and analyse expenses, organise and conduct distribution, promotion and market research, plan products and product programmes, form product cost and selling prices, organise and conduct sales of wood and wooden products

#### E Development engineering competencies

E1 Continue specialization on university graduate studies at the Wood Technology Department of the Faculty of Forestry.



**The link between learning outcomes and the outcome of learning a study program**

Course code	General engineering competencies				Focused engineering competencies					Technological engineering competencies								Organisational engineering competencies		Development engineering competencies
	A1	A2	A3	A4	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	C6	C7	C8	D1	D2	E1
33556	+		+																	+
33557	+	+	+	+																
228982				+	+															+
228983					+															
228984														+						+
226038																				+
33627		+		+																
33628					+															
228985														+						+
33630			+	+																
33631	+	+						+	+	+										
228986					+															
226042																				+
33633										+										
239398	+				+		+													
33635						+	+	+								+				+
236171										+	+							+		
33637	+			+				+	+											
226043																				+
235953														+						
235955												+								
33644													+							
33642															+					





## Mathematics

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Define and implement the tasks in terms of mathematical logic, sets, sets of numbers and mathematical induction	partial exams, oral exam	A1, A3, E1
Define, analyse, and relate the concepts and properties of applied functions of a real variable, as well as terms related to sequences (limit of a sequence, limit of a function)	partial exams, oral exam	A1, A3, E1
Define and apply the concepts of tasks derivatives, indefinite and definite integrals	partial exams, oral exam	A1, A3, E1
Define, analyse and apply the tasks in terms of functions of two variables	partial exams, oral exam	A1, A3, E1
Define the term and solve differential equations using a method of separation of variables	partial exams, oral exam	A1, A3, E1
Define and apply the tasks from introductory elementary algebra (vectors and matrices)	partial exams, oral exam	A1, A3, E1

### 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 (P)	20%			45		1,4
Exercises (V)	20%			45		1,4
1st Partial exam (K <sub>1</sub> )	5%	(50 – 64)%	sufficient (2)		10	0,35
2nd Partial exam (K <sub>2</sub> )	25%	(65 – 77)%	good (3)		50	1,75
3rd Partial exam (K <sub>3</sub> )	20%	(78 – 89)%	very good (4)		40	1,4
Oral exam (UI)	10%	(90–100)%	excellent (5)		20	0,7
<b>TOTAL</b>	<b>100%</b>	<b>0,2P+0,2V+0,05K<sub>1</sub>+0,25K<sub>2</sub>+0,2K<sub>3</sub>+0,1UI</b>		<b>90</b>	<b>120</b>	<b>7,0</b>

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Lectures (P)	20%			45		1,4
Exercises (V)	20%			45		1,4
*1st Partial exam (K <sub>1</sub> )	5%	(50 – 64)%	sufficient (2)		10	0,35
Written exam (PI)	45%	(65 – 77)%	good (3)		90	3,15
Oral exam (UI)	10%	(78 – 89)%			20	0,7



		(90–100)%	very good (4) excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>0,2P+0,2V+0,05K<sub>1</sub>+0,45PI+0,1UI</b>		<b>90</b>	<b>120</b>	<b>7,0</b>

\* students who do not pass all of three colloquium during the semester will approach the exam period (subject to the K<sub>i</sub>)

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

Evaluation elements	Description	Deadline	Compensation
Lectures (P)	Attendance at lectures (minimum 80% of 45 hours=36h)		
Exercises (V)	Attendance at exercises (minimum 80% of 45 hours=36h)		
1st Partial exam (K <sub>1</sub> )	Minimum 50% for access to 2nd Partial exam or to exam period		Multiple during semester
2nd Partial exam (K <sub>2</sub> )	Minimum 50% for access to 3rd Partial exam		Multiple during semester
3rd Partial exam (K <sub>3</sub> )	Minimum 50% for access to Oral exam		Multiple during the academic year
Written exam (PI)	Condition for access 0,8P+0,8V+0,5K <sub>1</sub>	exam period	
Oral exam (UI)	Condition for access 0,8P+0,8V+0,5K <sub>1</sub> +0,5 K <sub>2</sub> +0,5 K <sub>3</sub> or 0,8P+0,8V+0,5K <sub>1</sub> +0,5PI		

## Physics

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Identify the vector and scalar quantities.	colloquium, final exam, oral exam	A1
Explain the physical quantities that describe the translational motion	colloquium, final exam, oral exam	A1
Different types of translational motion and performing kinematic expressions of translational motions.	colloquium, final exam, oral exam	A2
Analyse the graphic description of the translational motion.	colloquium, final exam, oral exam	A2
Explain and perform expressions describing a uniform circular motion. Describe the effects of centripetal and centrifugal forces.	colloquium, final exam, oral exam	A2
Analyse the horizontal, vertical and piece shot	colloquium, final exam, oral exam	A2



Explain Newton's laws of motion. Explain Newton's general law of gravitation.	colloquium, final exam, oral exam	A2
Distinguish the fundamental forces in nature. Sketch and analyse the action of more force on the body. Find out the expressions for the force impulse and the amount of motion.	colloquium, final exam, oral exam	A3
Derive expressions for the impulse force and momentum.	colloquium, final exam, oral exam	A4
Analyse the graphical description of the isothermal, arsenic and isobaric changes in the state of ideal gases.	colloquium, final exam, oral exam	A4
Interpret the concept of work in the isobaric, isothermal and adiabatic change of state of an ideal gas	colloquium, final exam, oral exam	A2
Explain and analyse Carnot's circular process.	colloquium, final exam, oral exam	A2
Handle Mollier's h-x diagram.	colloquium, final exam, oral exam	A4

### 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
Partial exam 1 (PE 1))	30%	50-64%	Sufficient (2)	30	45	2,5
		65-79%	Good (3)			
		80-89%	Very good (4)			
		90-100%	Excellent (5)			
Partial exam 2 (PE 2)	30%	50-64%	Sufficient (2)	30	45	2,5
		65-79%	Good (3)			
		80-89%	Very good (4)			
		90-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>			60	90	5

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 bodovi
Final exam (FE)	50 %	50-64%	Sufficient (2)	60	90	5





	65-79%	Good (3)
	80-89%	Very good (4)
	90-100%	Excellent (5)
<b>TOTAL</b>	<b>100%</b>	

\* Students who do not pass through the semester during the semester will approach the exam time of 50% of the grade, and the remaining 50% make the grade from the oral part of the exam.

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

Evaluation elements	Description	Deadline	Compensation
Partial exam 1	Students who regularly attend classes can access the first colloquium. The quiz consists of 5 assignments, each assignment being 20 points. Students have met the first partial exam if they achieve 50 points.	8. week	Exceptionally, in the case of a justified reason for the absence.
Partial exam 2	Students who attend classes regularly and who have collected at least 50 points in the first colloquium can approach another colloquium. The second colloquium consists of 5 assignments, each assignment being 20 points. The students met the second exam if they scored 50 points.	15. week	Exceptionally, in the case of a justified reason for the absence.
Written exam	Exams can be accessed by students who regularly attend classes and did not meet the first or second qualifications. The written exam consists of 5 assignments, each carrying 20 points. The students met the written exam if they achieved 50 points, after which they approached the oral exam. The written exam is evaluated and participates in the final grade of the subject	examination deadlines	
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 the arithmetic mean of the written and oral part of the exam.	-	Exceptionally, in the case of a justified reason for the absence.

## Wood Chemistry

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Use the knowledge acquired in different wood technology areas and solve technological and qualitative tasks and problems in the wood industry.	Chemistry laboratory exercises, partial exams, test of knowledge, final exam	A4, B1, E1
Explain the chemical composition and properties of wood and apply the same during the basic working and processing of wood	Chemistry laboratory exercises, partial exams, test of knowledge, final exam	A4, B1, E1



Analyse and isolate all chemical components, whether analytically or instrumentally, related to determining different properties or for further working and processing of wood	Chemistry laboratory exercises, partial exams, test of knowledge, final exam	A4, B1, E1
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### 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 (P)	-			45	10	0,5
Exercises (V)	-			45	30	1,5
1. partial exam (PE1)	50%	51-63% (102-126 points)	sufficient (2)	5	45	2,5
		64-76% (128-153 points)	good (3)			
		77-89% (154-179 points)	very good (4)			
		90-100% (180-200 points)	excellent (5)			
2. partial exam (PE2)	50%	51-63% (102-126 points)	sufficient (2)	5	45	2,5
		64-76% (128-153 points)	good (3)			
		77-89% (154-179 points)	very good (4)			
		90-100% (180-200 points)	excellent (5)			
Total Final mark (FM)	<b>100%</b>	FM = PE1x50 + PE2x50)/100		100	140	7

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%	51-63% (102-126 points)	sufficient (2)	5	90	1
		64-76% (128-153 points)	good (3)			
		77-89% (154-179 points)	very good (4)			
		90-100% (180-200 points)	excellent (5)			
<b>TOTAL Final mark (FM)</b>	<b>100%</b>	<b>FM = FEx100/100</b>		5	90	1



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

<b>Evaluation elements</b>	<b>Description</b>	<b>Deadline</b>	<b>Compensation</b>
Attendance of lectures and exercises	The attendance is checked, and the attendance of the students is recorded. The student can justifiably absent from the direct teaching as much as stipulated in the Rulebook on Studying.	Semester (90 hours of direct lecturer and exercises)	-
Exercises (E)	As a part of the exercise, 15 practical laboratory exercises in the chemical laboratory are conducted, which are related to the subject content and the knowledge upgrade adopted during the lectures. Students with task assignments and instructions for making all 15 exercises, as well as the appearance of the fascicles, liners and inserts, receive during the first exercise in the form of Work Log. Exercise 1. The basics of laboratory chemistry work in the Work log is also a material for the qualification partial exam which is a prerequisite for the presence of other laboratory exercises in the chemical laboratory. The qualification partial exam consists of 8 questions and you need to answer exactly or more 5 answers for passage.	Continuously during the term of the semester according to the agreed term. Students who have created and explained all the exercises and those accepted by the teachers can access the exam.	-
Partial exam (PE)	Examination through the partial exams consists of two parts (1st and 2nd partial exam). Each partial exam consists of three units, namely (1) tasks, (2) structural formulas and (3) theories, and they must be taken in that order. The tasks consists of three questions (2 exact answers are required for the passage and does not enter the total sum of points) and the structural formula and theory of 10 questions where each question is worth for a maximum of 10 points (51% points required for the passage). The minimum number of points from both partial exams is 204 and a maximum of 400. The total score from the partial exams is also the final grade (no oral part of the exam).	Partial exam terms	
Written exam (WE)	Students who do not pass through the partial exams during the semester will approach the final exam that makes 100% of the grade. The final exam consists of three units, namely (1) tasks, (2) structural formulas and (3) theories and they must be taken in that order. The tasks consists of three questions (2 exact answers are required for the passage and does not enter the total sum of points) and the structural formula and theory of 10 questions where each question is worth for a maximum of 10 points (51% points required for the passage). The minimum number of points obtained is 102 and a maximum of 200.	Written exam terms	-
Oral exam (UI)	The oral exam is only in case the students want a higher final grade than the written exam. The requirement to enter an oral exam is that the score of the written exam is reached in the upper score of the score scale, is close to the score of the achieved score.	Exam terms	-



## Wood Anatomy

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Explain the main terms of macroscopic, microscopic and submicroscopic characteristics of wood structure helpful in identifying and technical wood properties	Exercises in practicum, colloquium and exam	B1
Differentiate native commercial wood species based on their microscopic and macroscopic characteristics with the help of wood identification keys.	Exercises in practicum, colloquium and exam	B1
Explain variations in wood anatomy structure within the tree, between trees of each species and explain the influence of variations in wood structure on technical properties of wood and its use.	Exercises in practicum, colloquium and exam	B1
Explain the origin of natural wood "defects", recognise them and explain their influence on selected technical properties.	Exercises in practicum, colloquium and exam	B1
Explain the influence of wood anatomy structure on its technical properties	Exercises in practicum, colloquium and exam	B1

### 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				45	25	2
Exercises (E)	5%	Mostly inaccurate, with major corrections	Sufficient (2)	55	10	3
		Mostly accurate, with corrections	Good (3)			
		Exact, with minor corrections	Very good (4)			
		Accurate and error-free	Excellent (5)			
Microscopic Wood Identification Colloquium (C1)	5%	Constant help of the examiner	Sufficient (2)	2	10	1
		Partial help of the examiner	Good (3)			
		Minor help of the examiner	Very good (4)			



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		without any help of the examiner	Excellent (5)			
Macroscopic Wood Identification Colloquium (C2)	15%	Constant help of the examiner	Sufficient (2)	2	10	1
		Partial help of the examiner	Good (3)			
		Minor help of the examiner	Very good (4)			
		without any help of the examiner	Excellent (5)			
Exam (E <sub>x</sub> )	75%	60-70%	Sufficient (2)	1	25	1
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(Ex5+ C1x5 + C2X15+ ExX75)/100</b>		<b>110</b>	<b>80</b>	<b>8</b>

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

Evaluation elements	Description	Deadline	Compensation
Lectures	The attendance is checked and recorded.	Semester	-
Exercises (E)	Exercises are attended by groups. There are 7 practical exercises of microscopic and macroscopic recognition of wood. The accuracy, tidiness and regularity of performance are evaluated.	Semester (15 hours of exercises)	Exceptionally, in the case of a justified reason
Microscopic Wood Identification Colloquia (C1)	It consists of determination of 2 types of coniferous and wood with the aid of keys. The colloquium is evaluated and participates in the final evaluation of the subject.	15. week	Colloquia can be taken three times in one academic year
Macroscopic Wood Identification Colloquia (C2)	It consists of determination of 10 types of coniferous and dicotyledonous woods with the aid of magnifiers. The colloquium is evaluated and participates in the final evaluation of the subject.	15. week	Colloquia can be taken three times in one academic year
Exam (E <sub>x</sub> )	The exam can be attended by students whose exercises and colloquia were evaluated positively. The written exam is evaluated and participates in the final grade of the subject.	Exam terms	-
Oral exam	Students get questions from different part of the subject program. Final mark of subject is achieved from the formula: <b>Ex5+C1x5+C2x15+Ex75/100</b>		



## Basics of design drawing

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Master the methods, techniques and materials of freelance design drawing	exercises, folder of papers, oral exam	C5, E1
Master the perception, proportion, composition and observation and analysis of products and spaces and their transfer to paper	exercises, folder of papers, oral exam	C5, E1
Analyse and draw the observed object in proportion using different drawing techniques, in spatial dawn (perspective) and orthogonal projection	exercises, folder of papers, oral exam	C5, E1
Draw an object according to visual memory with the application of the principle of aesthetic order	exercises, folder of papers, oral exam	C5, E1
Master critical thinking and visual expression on given examples	exercises, folder of papers, oral exam	C5, E1

### 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)	0			30	0	0,5
Exercises (E)	90%	Partial understanding of the adopted subject, poor student activity and the quality of the project task solution.	Sufficient (2)	30	25	1
		Partial understanding of the adopted subject, good student activity and quality of the project task solution.	Good (3)			
		Very well applied and adopted material, very good student activity and quality of the project task solution.	Very good (4)			
		Exceptional engagement, excellent applied and adopted material, excellent student activity and the quality of the project task solution.	Excellent (5)			
Oral exam (OE)	10%	60-70%	Sufficient (2)	0	5	0,5
		71-80%	Good (3)			



		81-90%	Very good (4)		
		91-100%	Excellent (5)		
<b>TOTAL</b>	<b>100%</b>	<b>(E×90 + OE×10) / 100</b>		60	30
					2

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

Evaluation elements	Description	Deadline	Compensation
Lectures	The attendance is checked and the presence of students is recorded. The student can justifiably be absent with a maximum of 20% of the tuition.	according to syllabus	
Exercises	The exercises are checked and recorded by the presence of students. The student can justifiably absent with a maximum of 10% of the exercise. During the semester, the student prepares exercises / tasks in team and individual work, monitoring continuous student progress and adopting thematic knowledge and skills, in accordance with the evaluation criteria. The right to sign is obtained by the number of attendance classes and exercises as well as assignments and seminars within the given deadline. It is obligatory to submit each phase of the project task to insight. Submission of the project task is by deadline, by the end of the semester.	according to the syllabus	
Oral exam	Requirements for the oral part of the exams are devoted and positively evaluated exercises, is project assignment, all other assignments and seminar papers. The oral exam consists of verbal defence (presentation) of the project task solution and the understanding of all phases of designing the conceptual and execution solution in the project assignment as well as the understanding and adoption of knowledge in lectures and exercises. The final grade is obtained according to the formula: $(V \times 90 + UI \times 10) / 100$	exam terms	

## Physical and health education 1

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Describe the structure of the physical exercise class.	exercises, correction and evaluation exercises	E1
Explanation of the impact of physical exercise on health.	exercises, correction and evaluation exercises	E1
Choose fitness exercises designed to strengthen individual muscle groups.	exercises, correction and demonstration	E1
Demonstrate specific exercises with regard to kinesiologic activity.	exercises, structural analysis, assistance, correction and evaluation exercises	E1



Organize constructive free time	Exercises and evaluation exercises	E1
Assess personal diet and physical exercise habits.	exercise, diet diary correction and evaluation exercises	E1
Demonstrate general preparatory exercises and stretching exercises.	exercises, description, demonstration, correction	E1
Understanding kinesiology programs and their target orientation.	exercises, description, demonstration, correction	E1
Control emotions and strengthen self-control.	Exercises, correction	E1

## Engineering mechanics

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Determine the resultant force of the system of forces acting on a body	partial exams, written exam, oral exam	A2
Calculate the moment of the force around an axis	partial exams, written exam, oral exam	A2
Model the contact forces at the body contact points with the other body and environment	partial exams, written exam, oral exam	A2
Write conditions/equations for the equilibrium of forces acting on a body	partial exams, written exam, oral exam	A2
Calculate reactive forces to keep the body in equilibrium	partial exams, written exam, oral exam	A2
Calculate the force of friction	partial exams, written exam, oral exam	A2
Determine the forces of belt friction	partial exams, written exam, oral exam	A2
Determine axial forces and draw axial forces diagram for axially loaded rods	partial exams, written exam, oral exam	A2
Determine shear forces and bending moments and draw diagrams of shear forces and bending moments on a beam	partial exams, written exam, oral exam	A2
Calculate twisting moments of torsional - loaded shaft and draw diagrams of twisting moments	partial exams, written exam, oral exam	A2
Determine stress and deformation of axially loaded rod	partial exams, written exam, oral exam	A2





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Determine shear stress	partial exams, written exam, oral exam	A2
Calculate stress and deformation of a shaft subjected to torsion	partial exams, written exam, oral exam	A2
Determine bending stress	partial exams, written exam, oral exam	A2
Determine dimensions of cross sections of structural members based on material strength criteria	partial exams, written exam, oral exam	A4
Examine the stability of columns	partial exams, written exam, oral exam	A2

**Methods of grading**

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average student's workload hours outside the direct teaching	ECTS
Lectures (L)	-	-	-	30	-	0
Exercises (E)	-	-	-	30	-	0
Partial exam 1 (PE1)	17 %	50 – 67 % 68 – 78 % 79 – 89 % 90 - 100 %	Sufficient (2) Good (3) Very good (4) Excellent (5)		15	1,0
Partial exam 2 (PE2)	17 %	50 – 67 % 68 – 78 % 79 – 89 % 90 - 100 %	Sufficient (2) Good (3) Very good (4) Excellent (5)		15	1,0
Partial exam 3 (PE3)	17 %	50 – 67 % 68 – 78 % 79 – 89 % 90 - 100 %	Sufficient (2) Good (3) Very good (4) Excellent (5)		15	1,0
Oral exam (OE)	49 %	50 – 67 % 68 – 78 % 79 – 89 % 90 - 100 %	Sufficient (2) Good (3) Very good (4) Excellent (5)		45	2
<b>TOTAL</b>	<b>100%</b>	<b>((PE1+PE2+PE3)x17+OEx49)/100</b>		60	90	5

Evaluation elements	Maximum points or share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average student's workload hours outside the direct teaching	ECTS points
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Written exam* (WE)	50 %	50 – 67 % 68 – 78 % 79 – 89 % 90 - 100 %	Sufficient (2) Good (3) Very good (4) Excellent (5)		45	2,5
Oral exam* (OE)	50 %	50 – 67 % 68 – 78 % 79 – 89 % 90 - 100 %	Sufficient (2) Good (3) Very good (4) Excellent (5)		45	2,5
<b>TOTAL</b>	<b>100%</b>	<b>(WEx50+OEx50)/100</b>				<b>5</b>
* Students who do not pass tests during the semester will approach the exam, during examination period, that makes 100% of the grade (written exam - 50%, oral exam - 50%)						

**Detailed description of evaluation elements for lectures, exercises, partial exams, written and oral exams:**

Evaluation elements	Description	Deadline	Compensation
Attendance of lectures and exercise	The attendance is checked, and the attendance of the students is recorded. The student can miss maximum 20% of hours of direct teaching.	semester (60 hours of direct teaching)	-
Partial exams (PE1, PE2, PE3)	Students who regularly attend classes can take semester tests, making it easier pass the exam "stage by stage". The semester tests are evaluated and participate in the final grade.	K1 – 6. week K2 – 11. week K3 – after the lectures	-
Written exam	Exams can be taken by students who have sufficient attendance at lectures. Students solve tasks containing computational problems. The written exam is evaluated and participates in the final grade of the subject.	Examination period	-
Oral exam	Students who pass 3 semester tests or a written exam are asked questions from different parts of the curriculum content. The final grade of the course is obtained according to the formula  $((PE1+PE2+PE3) \times 17 + OEx49) / 100$ or $(WEx50 + OEx50) / 100$		

## The Basics of Dendrology

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
To define and explain biological features and morphological characteristics of the selected genera of autochthonous and allochthonous gymnosperms and angiosperms;	final exam	B1



To identify and describe economically important autochthonous and allochthonous gymnosperm and angiosperm tree species according to: bark, twigs and buds in winter, leaves, cones, fruits and seeds;	final exam	B1
To use determination keys;	final exam	B1
To group autochthonous and allochthonous gymnosperm and angiosperm tree species according to biological features, morphological characteristics, distribution and economic importance;	final exam	B1

### 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		0.5
Exercises (E)	5%	60-70%	Sufficient (2)	30		1
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
Homework (HW)	5%	70-80%	Sufficient (2)		15	0.5
		81-89%	Good (3)			
		90-94%	Very good (4)			
		95-100%	Excellent (5)			
Herbarium collection (H)					15	0.5
<b>TOTAL</b>	<b>10%</b>	<b>(Ex5+HWx5)/1 00</b>		45	30	2,5

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
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Final exam (FE)	90 %	60-70%	Sufficient (2)	15	0.5
		71-80%	Good (3)		
		81-90%	Very good (4)		
		91-100%	Excellent (5)		

<b>TOTAL</b>	<b>100%</b>	<b>(FEx90+Ex5+HWx5)/100</b>			
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\* students take the final exam that is 90% of the grade; the remaining 5% is the grade of the exercises and 5% the grade of the homework

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

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

## Applied technical graphics

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Apply technical standards for drawing orthogonal projection, characteristic sections and isometry of wooden models;	Correction and evaluation of exercises, final exam	C5, E1
Create technical documentation using traditional and CAD 2D techniques in accordance with technical standards used in the wood industry	Correction and evaluation of exercises, final exam	C5, E1



Apply the basics of CAD 3D computer technology for designing 3D models and creating technical documentation	Exercises in a computer classroom, correction and evaluation of exercises, final exam	C5, E1
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### 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%	Transcribed lectures with less than 15% of the eligible weaknesses of the application of technical standards	Sufficient (2)	15	15	1
		Transcribed lectures with less than 10% of the eligible weaknesses of the application of technical standards	Good (3)			
		Transcribed lectures with less than 5% of the eligible weaknesses of the application of technical standards	Very good (4)			
		Transcribed lectures without any weaknesses of the application of technical standards	Excellent (5)			
Exercises (E)	30%	The exact exercise with less than 15% of the eligible weaknesses of the application of technical standards	Sufficient (2)	45	30	2,5
		The exact exercise with less than 10% of the eligible weaknesses of the application of technical standards	Good (3)			
		The exact exercise with less than 5% of the eligible weaknesses of the application of technical standards	Very good (4)			
		The exact exercise without any weaknesses of the application of technical standards	Excellent (5)			
Partial exam – orthogonal projection (Colloquia) (PE)	30%	60-70%	Sufficient (2)	2	19	0,7
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
Partial exam – cross section (Colloquia) (PE)	30%	60-70%	Sufficient (2)	2	22	0,8
		71-80%	Good (3)			
		81-90%	Very good (4)			



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		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(Lx10+Ex30 + 2PEx30)/100</b>		64	86	5

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%	Sufficient (2)	4	41	1,5
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(FE80+E20)/100</b>				

\*students who do not pass through the colloquia approach 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 exercises	The presence of students on the class is recorded. A student may justifiably be absent with a maximum of 15% of direct teaching hours. The student activity is recorded.	semester (60 hours of direct lecturer)	-
Making exercises	The exercises are performed in groups. Each exercise can be evaluated two times. If the rate is insufficient (1) or it is not evaluated, exercise can be given on conditional terms (if student have less absented hours than is prescribed if average grade of all exercises is more than sufficient (2)).	In order to Syllabus	Two conditional terms for exercise evaluation
Partial exam / First colloquium (K1)	On the first colloquium can attend students how have positive grade of 1. exercise and have no absent more than 15%. It is needed to collect 60% for positive grade.	11. week	-
Partial exam / Second colloquium (K2)	On the second colloquium can attend students how have more than 60 % points from the first colloquium. Students who collect 60% from both colloquiums obtain the final grade. The final grade is the average score from the exercise and the score by the points. An oral check of computer drawing skills follows behind the colloquium.	15. week	-
Written exam	Written exam has four drawing tasks. Drawings are made in sketch.	Exam terms	-
Oral exam	Passed written exam is needed for taking oral exam. Verification of theoretical knowledge (from scripts), understanding of projections and drawing in AutoCAD and 3D modelling in Inventor. The final grade is obtained according to the formula <b>(FE80+E20)/100</b>		-



## Wood industry mechanical engineering

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Define mechanical properties and testing	partial exam, written exam, oral exam	A3, A4
Compare effects of heat and chemical-heat treatment of steel on a dynamic load of machine elements	partial exam, written exam, oral exam	A3, A4
Analyse the use of tool steels and new materials in production phases of mechanical processing	partial exam, written exam, oral exam	A3, A4
Identification of connecting elements, power and motion transmission elements	partial exam, written exam, oral exam	A3, A4
Calculate load magnitude at non-separable and separable joints	partial exam, written exam, oral exam	A3, A4
Check main quantities in work with rotation motion elements, peripheral and angular velocity, speed frequency, torque	partial exam, written exam, oral exam	A3, A4
Calculate power transfer elements by friction and engagement	partial exam, written exam, oral exam	A3, A4
Construct machine elements and define their application	partial exam, written exam, oral exam	A3, A4
Apply basic technical criteria for designing and dimensioning machine elements (factor of safety)	partial exam, written exam, oral exam	A3, A4
Analysis of piping, stop, safety and regulating organs from the point of pressure loss	partial exam, written exam, oral exam	A3, A4
Compare fusion and force (friction) welding methods in WI plants and calculation of stress in welded joints	partial exam, written exam, oral exam	A3, A4
Check and compare working features of turbopumps on Q - H, Q - $\eta$ , Q - P diagrams	partial exam, written exam, oral exam	A3, A4
Differ types and characteristics of turbine plants in WI plants	partial exam, written exam, oral exam	A3, A4
Analyse the operation of the internal combustion engine from the standpoint of energy consumption considering the travelled distance	partial exam, written exam, oral exam	A3, A4



Describe existing energy problems in WI and make plans for the application of renewable energy sources (forest biomass)	partial exam, written exam, oral exam	A3, A4
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### 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	
Exercises (E)	-	-	-	30	0	
Partial exam 1 (PE1)	16 %	50 - 67 % 68 - 78 % 79 - 89 % 90 - 100 %	Sufficient (2) Good (3) Very good(4) Excellent (5)		15	0,8
Partial exam 2 (PE2)	17 %	50 - 67 % 68 - 78 % 79 - 89 % 90 - 100 %	Sufficient (2) Good (3) Very good(4) Excellent (5)		20	0,85
Partial exam 3 (PE3)	17 %	50 - 67 % 68 - 78 % 79 - 89 % 90 - 100 %	Sufficient (2) Good (3) Very good(4) Excellent (5)		20	0,85
Oral exam (OE)	50 %	50 - 67 % 68 - 78 % 79 - 89 % 90 - 100 %	Sufficient (2) Good (3) Very good(4) Excellent (5)		25	2,5
<b>TOTAL</b>	<b>100 %</b>	<b>((PE1x16)+(PE2+PE3)x17 + OEx50)/100</b>		60	80	5

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
Written exam*(WE)	50%	50 - 67 % 68 - 78 % 79 - 89 % 90 - 100 %	Sufficient (2) Good (3) Very good(4) Excellent (5)		50	2,5
Oral exam* (OE)	50%	50 - 67 % 68 - 78 %	Sufficient (2) Good (3)		30	2,5





		79 - 89 %	Very good(4)			
		90 - 100 %	Excellent (5)			
<b>TOTAL</b>	<b>100 %</b>	<b>(WEx50+OEx50)/100</b>				
* students who do not pass the exam through the partial exams during the semester, will approach the final exam which makes 100% of the grade (written exam - 50%, oral exam 50%).						

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

Evaluation elements	Description	Deadline	Compensation
Lectures + exercises	The teaching attendance is checked and recorded. Students may be absent with a maximum share of 20 % of direct teaching.	semester (60 hours of direct lecturer)	-
Partial exam (PE1, PE2, PE3)	Students who regularly attend teachings can approach the writing of a partial exam, making them easier to pass the exam because the lessons are learned in the "stages". The partial exam is evaluated and participates in the final grade.	PE1 – 6. week PE2 – 11. week PE3 – after finished lectures	-
Written exam	Exams can be attended by students who have sufficient teaching attendance. Students solve tasks and answer asked questions. The written exam is evaluated and participates in the final grade.	Exam terms	-
Oral exam	Students who pass 3 partial exams or a written exam are asked for questions from different parts of the teaching program content. The final grade is obtained according to the formula  <b><math>((PE1 \times 16) + (PE2 + PE3) \times 17 + OEx50) / 100</math> or <math>WEx50 + OEx50 / 100</math></b>		

## Fundamentals of electrotechnics

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Define Coulomb's law and explain the meaning of the constants in the expression for the Coulomb force.	colloquium, final exam, oral exam	A2
Name and describe the physical quantity which describes the electric field.	colloquium, final exam, oral exam	A1
Apply the Gaussian law, for example, to determine the electric field of charged metal spheres, plates and capacitors.	colloquium, final exam, oral exam	B4
Analyse the serial and parallel condenser connections.	colloquium, final exam, oral exam	B3
Explain the capacity of the capacitor and the role of the dielectric at the capacitor.	colloquium, final exam, oral exam	B3



Describe direct current sources. Demonstrate Kirchhoff's rules on an arbitrary example.	colloquium, final exam, oral exam	A3
Analyse complex current circuits of direct current. Explain the occurrence of magnetism and electromagnetic induction.	colloquium, final exam, oral exam	B5
Use the rule of the right hand to determine the direction of Amper and Lorentz force.	colloquium, final exam, oral exam	B5
Appoint and describe the physical size of the alternating current with appropriate current and effective values.	colloquium, final exam, oral exam	A2
Analyse the RLC titre circle and explain the role of each element in the circle	colloquium, final exam, oral exam	B5
Distinguish the active, reactive and apparent power of alternating current.	colloquium, final exam, oral exam	A2
Explain the principle of electric motor and generator operation. Analyse the three-phase system. Interpret electrical measurements in woodworking plants.	colloquium, final exam, oral exam	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
Partial exam 1 (PE 1))	30%	50-64%	Sufficient (2)	30	30	2,5
		65-79%	Good (3)			
		80-89%	Very good (4)			
		90-100%	Excellent (5)			
Partial exam 2 (PE 2)	30%	50-64%	Sufficient (2)	30	30	2,5
		65-79%	Good (3)			
		80-89%	Very good (4)			
		90-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>			60	60	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 (FE)	50 %	50-64%	Sufficient (2)	60	60	4
		65-79%	Good (3)			
		80-89%	Very good (4)			
		90-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>					

\* Students who do not pass through the semester during the semester will approach the exam time of 50% of the grade, and the remaining 50% make the grade from the oral part of the exam

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

Evaluation elements	Description	Deadline	Compensation
Partial exam 1	Students who regularly attend classes can access the first colloquium. The quiz consists of 5 assignments, each assignment being 20 points. Students have met the first partial exam if they achieve 50 points.	8. week	Exceptionally, in the case of a justified reason for the absence.
Partial exam 2	Students who attend classes regularly and who have collected at least 50 points in the first colloquium can approach another colloquium. The second colloquium consists of 5 assignments, each assignment being 20 points. The students met the second exam if they scored 50 points.	15. week	Exceptionally, in the case of a justified reason for the absence.
Written exam	Exams can be accessed by students who regularly attend classes and did not meet the first or second qualifications. The written exam consists of 5 assignments, each carrying 20 points. The students met the written exam if they achieved 50 points, after which they approached the oral exam. The written exam is evaluated and participates in the final grade of the subject	examination deadlines	
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 the arithmetic mean of the written and oral part of the exam.	-	Exceptionally, in the case of a justified reason for the absence.

## Technical properties of wood I

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Determine parameters essential for the identification of commercial wood species, tree parts and tree modifications	Exercises evaluation, partial exams, final exam	B1



Defining the structure of wood as a factor in the properties of wood	Exercises evaluation, partial exams, final exam	B1
Wood cross-sectional properties	Exercises evaluation, partial exams, final exam	B1
Defining and determining the physical properties of wood	Exercises evaluation, partial exams, final exam	B1
Defining and determining the most significant factors that affect the physical properties of wood	Exercises evaluation, partial exams, final exam	B1
Defining the distribution of physical properties of wood in the radial direction	Exercises evaluation, partial exams, final exam	B1

### 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	75	3
Exercises (E)	70%	Partly orderly and understandable, with major improvements required and on time	Sufficient (2)	60	30	3
		Orderly, readable, with major improvements required and on time	Good (3)			
		Orderly, readable, with minor improvements required and on time	Very good (4)			
		Orderly, readable, accurate and on time	Excellent (5)			
Partial exam I (PE1)	30%	61-70%	Sufficient (2)	1	29	1
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(Ex70+ PE1x30)/100</b>		106	135	7

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
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Final exam (FE)	100 %	61-70%	Sufficient (2)	2	28	1
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(Fex100)/100</b>				
<b>* students who don't pass the partial exams during the semester have to attend the final exam which is 100% of the grade.</b>						

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

Evaluation elements	Description	Deadline	Compensation
Attendance of lectures and exercise	Students attendance is checked and notified. Student can miss 15% of the classes justifiably the most.	semester (105 hours of direct lectures)	
Exercise project	Exercises are given in groups and student make exercise project individually. Each project is complex (1 project) and it is made in parts corresponding to teaching parts. Student presents the whole project at the end of semester, and each part is evaluated on lectures during the semester.	end of semester	
Partial exam 1	First partial exam can be attended by students who did not miss more than 15% of lectures and exercises.	end of semester	
Written and oral exam	Students who did not pass the subject through partial exams and exercise project (less the 61% of points), or who are not satisfied with the grade, can attend the final oral exam in given exam periods. The grade given on oral exam is final and it makes 100% of the grade.	In given exam periods	

## Physical and health education 2

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Describe the structure of the physical exercise class.	exercises, correction and evaluation exercises	E1
Explanation of the impact of physical exercise on health.	exercises, correction and evaluation exercises	E1
Choose fitness exercises designed to strengthen individual muscle groups.	exercises, correction and demonstration	E1
Demonstrate specific exercises with regard to kinesiological activity.	exercises, structural analysis, assistance, correction and evaluation exercises	E1
Organize constructive free time	Exercises and evaluation exercises	E1



Assess personal diet and physical exercise habits.	exercise, diet diary correction and evaluation exercises	E1
Demonstrate general preparatory exercises and stretching exercises.	exercises, description, demonstration, correction	E1
Understanding kinesiology programs and their target orientation.	exercises, description, demonstration, correction	E1
Control emotions and strengthen self-control.	Exercises, correction	E1

## Woodworking machinery I

### Learning outcomes and evaluation methods

<b>Learning outcomes (LO)</b>	<b>Evaluation methods</b>	<b>Connection with the study program LO</b>
Distinguish characteristic types of woodworking machines and tools with and without forming wood shavings (saw blades, circular saw blades, planers, mills, drills, lathes)	partial exam, final exam	C1
Explain the term elementary blade and sketch the basic geometrical cutting edge elements.	partial exam, final exam	C1
Explain the difference between elemental and real blade.	partial exam, final exam	C1
Identify the basic forms of tool-tip blunting and distinguish the causes of wear that cause some form of blunting.	partial exam, final exam	C1
Differentiate the basic materials for making tool blades (tool steel, high-speed steel, hard alloy, hard metals, artificial diamonds) and basic properties of these materials that are essential for woodworking (strength, hardness, temperature stability).	partial exam, final exam	C1
Group influential variables on tool-tip life time in different processing conditions and analyse their mutual relationship.	partial exam, final exam	C1
Sketch and analyse forces on the tool-tip.	partial exam, final exam	C1
Explain the role of individual cutting edge elements during cutting.	partial exam, final exam	C1
Identify wood properties and tool-tip characteristics that affect the cutting process.	partial exam, final exam	C1



Identify the basic types of wood shavings in mechanical woodworking and identify the causes of the formation of a particular type of shaving.	partial exam, final exam	C1
List the influential parameters and calculate the specific cutting resistance in the given processing conditions.	partial exam, final exam	C1
Calculate the technological parameters for basic types of woodworking machines	partial exam, final exam	C1
Calculate the cutting forces in basic types of woodworking machines	partial exam, final exam	C1
Calculate the cutting power and electric motor power required for basic types of woodworking machines	partial exam, final exam	C1
Calculate the capacity of basic types of woodworking machines	partial exam, final exam	C1
Sketch the basic woodworking tools (saw blades, circular saw blades, milling cutter, drill bit) with all the essential elements (tool diameter, tool blade angles, etc.).	partial exam, final exam	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 (L)	-	-	-	45	0	1,5
Exercises (E)	-	-	-	45	0	1,5
Partial exam 1 (PE1)	50%	50-60%	Sufficient (2)	2	43	1,5
		61-75%	Good (3)			
		76-90%	Very good (4)			
		91-100%	Excellent (5)			
Partial exam 2 (PE2)	50%	50-60%	Sufficient (2)	2	43	1,5
		61-75%	Good (3)			
		76-90%	Very good (4)			



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		91-100%	Excellent (5)			
<b>UKUPNO</b>	<b>100%</b>	<b>(P + V + K1x50 + K2x50)/100</b>		<b>94</b>	<b>86</b>	<b>6</b>

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 bodovi
Final exam (FE)	100 %	50-60%	Sufficient (2)	4	86	3
		61-75%	Good (3)			
		76-90%	Very good (4)			
		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(FEx1)/100</b>				

**Detailed description of evaluation elements for lecturer, excercises, 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 15% of direct teaching hours.	semester (90 hours of direct lecturer)	-
Partial exam 1 (PE1)	The partial exam can be accessed by all students.	9. week	
Partial exam 2 (PE2)	The second partial exam can be accessed by students who have passed the first partial exam. Students who get enough points from both partial exams get a final score.	15. week	
Written exam	The written exam consists of three numerical tasks in the field of band saws, circular saw, planer, milling machine, drill and lathe. For the passage it is necessary to have at least 50% of the total number of 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. Theoretical knowledge, understanding and detailed examination of the subjects studied in the lectures, is checked. The final grade is obtained according to the formula <b>(FEx100)/100</b>	Exam terms	





## Technical properties of wood II

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Introduction to measuring instruments for determining the mechanical properties of wood	Exercises evaluation, partial exams, final exam	A1, B1, B3
Determination of mechanical properties of wood	Exercises evaluation, partial exams, final exam	A1, B1, B3
Evaluation of wood species based on mechanical properties of wood	Exercises evaluation, partial exams, final exam	A1, B1, B3
Defining the radial distribution of mechanical properties of wood and their impact on further processing and use of wood	Exercises evaluation, partial exams, final exam	A1, B1, B3
Defining wood defects on trees and round wood	Exercises evaluation, partial exams, final exam	A1, B1, B3
Practical recognition and valorisation of wood defects on trees and round wood	Exercises evaluation, partial exams, final exam	A1, B1, 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)	-	-	-	30	15	2
Exercises (E)	70%	Partly orderly and understandable, with major improvements required and on time	Sufficient (2)	30	30	1
		Orderly, readable, with major improvements required and on time	Good (3)			
		Orderly, readable, with minor improvements required and on time	Very good (4)			
		Orderly, readable, accurate and on time	Excellent (5)			
Partial exam 1 (PE1)	30%	61-70%	Sufficient (2)	1	14	2
		71-80%	Good (3)			
		81-90%	Very good (4)			



		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(Vx40 + K1x30+K2x30)/100</b>		61	59	5

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 %	50-60%	Sufficient (2)	2	30	1
		61-75%	Good (3)			
		76-90%	Very good (4)			
		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(Fex100)/100</b>				
* Students who don't pass the partial exams during the semester have to attend the final exam which is 100% of the grade.						

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

Evaluation elements	Description	Deadline	Compensation
Attendance of lectures and exercise	Students attendance is checked and notified. A justified absence of up to 20% of lectures and 10% of exercises is allowed	semester (105 hours of direct lectures)	-
Exercise project	Each exercise is complex (1 par) and performed according to lectures. On the end of the semester student gives all exercises assignments. Some part of exercises assignment is checked during the exercises.	end of semester	
Partial exam 1	All students with absence from lectures and exercise minor than 15% can submit to 1. colloquium. Colloquia consist 30 points and curriculum covered from the lectures and exercises until then.	end of semester	
Written and oral exam	Students who did not achieved positive assessment from the exercises and the colloquium (less than 61% of the total score) or are not satisfied with that grade, approach the written and oral exams according to certain examination deadlines. The score obtained on the oral exam is the final grade in the 100% ratio.	In given exam periods	

## Pathology and wood protection

### Learning Outcomes and Methods of Verification

Learning Outcomes (LO)	Methods of Verification	Correlation with LO of the Study Program
Explain which chemical components of the wood structure and how they affect the biological resistance of the wood.	exercises 1 and 2, 1 <sup>st</sup> colloquium, final exam	B2



Distinguish the biological resistance of the natural durability of wood and define them.	exercises 1 and 2, 1 <sup>st</sup> colloquium, final exam	B2
Analyse and describe the degree of degradation of wood by abiotic factors.	exercises 1 and 2, 1 <sup>st</sup> colloquium, final exam	B2, B4, E1
Differentiate and explain faults in the structure and physical properties of wood resulting from the degradation of abiotic factors from faults caused by biodegradation of wood.	exercises 3 and 4, 2 <sup>nd</sup> colloquium, final exam	B2, B3
Differentiate and explain the bacterial degradation of wood from fungal degradation of wood.	exercises 3 and 4, 2 <sup>nd</sup> colloquium, final exam	B2, B3
Differentiate and explain the faults in the structure and physical properties of wood resulting from the degradation of wood by certain groups (types, species) of wood decaying fungi.	exercises 3 and 4, 2 <sup>nd</sup> colloquium, final exam	B2
Identify and distinguish insects from other arthropods.	exercise 4, 3 <sup>rd</sup> colloquium, final exam	B2, B3
Identify and distinguish between commercially the most important species of xylophagous insects based on morphological images of adult insects.	exercise 4, 3 <sup>rd</sup> colloquium, final exam	B2, B3, E1
Differentiate and describe faults in the structure of wood caused by degradation of certain groups, genera and / or insect species.	exercise 4, 3 <sup>rd</sup> colloquium, final exam	B2, B3, B4, C7, E1
Differentiate and describe faults in the structure of wood caused by the degradation of individual groups, genera and / or species of marine pests.	exercise 4, 3 <sup>rd</sup> colloquium, final exam	B2, E1
Analyse and describe the degree of degradation of wood caused by xylophagous organisms and assess the risk of using such wood in the manufacture of wooden products.	exercises 2 – 4, 3 <sup>rd</sup> colloquium, final exam	B2
Predict the mechanism of degradation of wood in certain use classes.	exercises 2 – 4, 3 <sup>rd</sup> colloquium, final exam	B2
Recommend an appropriate wood protection procedure under the given conditions.	exercises 3 – 7, 3 <sup>rd</sup> colloquium, final exam	B2, B4, E1
Independently write a report and present it in front of a group of people.	Seminar	B2, B3

**Grading method = Taking exam**

Tracking elements	Grading share	Score scale / Grading	Grade	Number of Direct Teaching Hours	Number of working hours of an average student beside direct teaching	ECTS credits
Lectures (L)	–	–	–	42		1.5



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Making Exercises (E)	20%	Correct exercises with less than 15 % of acceptable deficiencies	Sufficient (2)	42	63	3.5
		Correct exercises with less than 10 % of acceptable deficiencies	Good (3)			
		Correct exercises with less than 5 % of acceptable deficiencies	Very good (4)			
		Correct exercises with less than 1 % of acceptable deficiencies	Excellent (5)			
1 <sup>st</sup> , 2 <sup>nd</sup> and 3 <sup>rd</sup> Colloquium in written form	40%	60-70%	Sufficient (2)	3	30	1
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
Final exam – oral exam (OE)  or  Seminar paper – SEM*	40%	60-70%	Sufficient (2)	3	27	1
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
		Seminar paper with less than 8 % of acceptable deficiencies	Very good (4)	3		
		Seminar paper with less than 1 % of acceptable deficiencies	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b><math>(E \times 20 + (C1+C2+C3) \times 40 + OE \times 40) / 100</math> or <math>(E \times 20 + (C1+C2+C3) \times 40 + SEM \times 40) / 100</math></b>		<b>90</b>	<b>120</b>	<b>7</b>
<b>* students who pass all three colloquia and choose to do seminar papers don't need to complete the final exam; the defended seminar paper changes the final oral exam.</b>						

Tracking elements	Maximum points ar grading share	Score scale / Grading	Grade	Number of Direct Teaching Hours	Number of working hours of an average student beside direct teaching	ECTS credits
Final Exam* (FE)	80 %	60-70%	Sufficient (2)		57	2
Written part (W)		71-80%	Good (3)			
+		81-90%	Very good (4)			
Oral part (O)		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b><math>(E \times 20 + FE \times 80) / 100</math></b>				
<b>* students who don't pass all three colloquia during the semester have to take final exam consisting of a written and oral part, and they make up to 80 % of the total grade, while the remaining 20 % make a grade of exercises</b>						



**Advanced reasoned rules of preparation, implementation and taking colloquia, seminar papers, partial exams, written and oral exams:**

Tracking elements	Description	Deadline	Recoupment
Lectures + Exercises (laboratory work)	The presence of students is checked and recorded during the lectures. A student may justifiably be absent with a maximum of 15% of direct teaching hours.	semester (90 direct teaching hours)	-
Making Exercises (E)	Exercises are attended by groups. As part of the exercise, 5 practical exercises are carried out. At the beginning of the first exercise, students will receive templates with the look of the file, inserts and worksheets on which the students will handle and teach their exercises. Each exercise is reviewed twice. If the grade is inadequate or not reviewed, it can be submitted within the probationary period (the student has the right to submit a maximum of two exercises within the probationary period, otherwise the right to sign the course is lost).	according to the agreed delivery dynamics	One probationary period for submitting the exercises for revision.
First Colloquium (C1)	The first colloquium contains the following material: hygroscopicity and wood chemistry, natural durability of wood and biological resistance, history of wood protection, abiological degradation of wood. Each colloquium has 20 questions, and each question equals one point. Partially correct answers (semi-points) or negative points does not exist. The minimum number of points for passage the colloquium is 12 (12 of 20 = 60%).	4 <sup>th</sup> week	-
Second Colloquium (C2)	Second colloquium are available to students who have passed the first colloquium. Second colloquium contains the following materials: decaying fungi and bacteria. The minimum number of points for passage the colloquium is 12 (12 of 20 = 60%).	7 <sup>th</sup> and 13 <sup>th</sup> week	There is a possibility of correctional second colloquium at the time of the third colloquium.
Third Colloquium (C3)	Third Colloquium are available to students who have passed the first and second colloquium, as well as students who have passed only the first colloquium but at the same time, they are taking 2nd and 3rd colloquium together. The third colloquium contains the following: xylophagous insects and marine pests, wood protection. Each colloquium has 20 questions, and each question equals one point. Partially correct answers (semi-points) as well as negative points does not exist. The minimum number of points for the passage each colloquium is 12 (12 points of 20 = 60%). All three colloquia are scored with a total of 60 points, with a total minimum of 36 of 60 points being needed for the pass (60%). Students who get enough points from all three colloquia only access the oral part of the exam, and if they successfully defend the seminar paper (the minimum grade is very good (4)), they get a final grade on the subject with no need of taking oral part of the exam. The final grade is the sum of Exercises (E), Colloquia (C1, C2 and C3) and Oral Exam (OE) or Seminar (SEM): $(E \times 20 + (C1 + C2 + C3) \times 40 + OE \times 40) / 100$ $(E \times 20 + (C1 + C2 + C3) \times 40 + SEM \times 40) / 100$	13 <sup>th</sup> week and first examination period	There is a possibility of correctional third Colloquium on the first examination period at the time of the written exam.
Seminar paper	Seminar works are available to students who, until the moment of presentation of the conditions of making and theme of seminar papers, do not have a single absence from lectures and from exercises, and have passed the first colloquium. Seminar work is submitted for review by arrangement with the teachers throughout the semester. The final version is submitted to the 14 <sup>th</sup> week and defending in the 14 <sup>th</sup> or 15 <sup>th</sup> week of the semester, provided that the student has passed all three colloquia. A written part of the seminar and	14 <sup>th</sup> and 15 <sup>th</sup> week	-



	<p>oral presentation are evaluated (defence in front of the whole group of students). Overall rating of the seminar paper should not be less than very good (4) in order to replace the oral exam.</p> <p>The final grade is the sum of Exercises (E), Colloquia (C1, C2 and C3) and Seminar (SEM)</p> <p><b><math>(E \times 20 + (C1 + C2 + C3) \times 40 + SEM \times 40) / 100</math></b></p>		
Final exam (FE) written part	<p>The written exam consists of 60 questions, and each question carries one point. Partially correct answers (half-points) and negative points does not exist. The minimum number of points for the passage is 36 (36 of 60 = 60%).</p> <p>After completing the written part of the exam, students have a break (how much is needed for the teacher to review the written assignments) and afterwards (the same day) students that passed written part of exam approach the oral part of exam in groups of two to four students.</p>	examination periods	-
Final exam (FE) oral part	<p>The requirement for the oral part of the exam is enough points collected either in colloquia or on the written part of the exam.</p> <p>Practical knowledge of the recognition of biodegradation of wood on 4 samples is required, which is a condition for the further course of the oral part of the exam.</p> <p>After the successful recognition of all four samples, the student is asked two theoretical questions (questions from the least solved colloquium) or three theoretical questions covering entire material. The final grade is obtained according to the formula:</p> <p><b><math>(E \times 20 + FE \times 80) / 100</math></b></p>	examination periods	-

## Sawmilling technology

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Distinguish type and quality of oak, beech, fir and spruce sawmilling raw material	Exercises, exam	C2
Distinguish type and quality of oak, beech, fir and spruce sawmilling products	Exercises, exam	C2
Measure the dimensions of the round wood (diameter and length)	Exercises, exam	C2
Calculate individual volumes of round wood shavings based on the measurement of their dimensions (diameter and length)	Exercises, exam	C2
Estimate (calculate) the volume of the stack, or the volume of the round wood in the stack	Exercises, exam	C2
Calculate individual volumes of sawmilling products by measuring their dimensions (thickness, width and length)	Exercises, exam	C2
Estimate the (computed) volume of the stack, or the volume of sawmilling products in the stack	Exercises, exam	C2
Calculation of oversized on sawmilling products	Exercises, exam	C2



Distinguish types and application of log band saws and resaws	Exercises, exam	C1
Distinguish the types and application of the frame saws	Exercises, exam	C1
Distinguish types and application of circular saws	Exercises, exam	C1
Distinguish types and applications of secondary sawing circular saws specializing in cross-cut sawing	Exercises, exam	C1
Different types and applications of secondary sawing circular saws specializing in rip sawing	Exercises, exam	C1
Link different types of sawing machines to sawmilling technology,	Exercises, exam	C1
Calculate the success of sawing of certain wood species according to the criteria of quantitative yield of round and sawn wood,	Exercises, exam	C2
Calculate the success of sawing of certain wood species according to the criteria of value yield of round and sawn wood	Exercises, exam	C2
Use the basic methods of sawing logs	Exercises, exam	C2
Use the basic methods of sawing the planks	Exercises, exam	C2
Plan and organize day-to-day sawmilling production	Exercises, exam	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		1,5
Exercises (E)				45	45	3
Written exam (WE)	100%	70-79%	Sufficient (2)		30	1,5
		80-89%	Good (3)			
		90-95%	Very good (4)			
		95-100%	Excellent (5)			
*Oral exam (OE)		Percentage of response accuracy $\geq 70\%$	Positively			
		Percentage of response accuracy $< 70\%$	Negative			



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Total Final exam (FE)		FE=WE+1	75	75	6
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\* Only those students who want a higher final grade than those obtained on a written exam are issued to the oral exam. The requirement to enter an oral exam is that the score of the written exam is reached in the upper score of the score scale, close to the score of the achieved score. In the case of 70% and more positive answers, the final grade can only be achieved by one step higher than the previously achieved on the written exam.

**Detailed description of evaluation elements for lecturer, excercises, 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 justifiably absent from the direct teaching as much as stipulated in the Rulebook on Studying.	Semester (75 hours of direct lecturer and exercises)	-
Exercises (E)	As part of the exercise, 6 counting exercises and drawings are performed. Students with task assignments and tips for making all 6 exercises, and the appearance of the file, card and inserts are downloaded from the subject's web site. When submitting the exercises, the student should explain how to solve the exercises.	Continuously during the term of the semester according to the agreed term. Students who have created and explained all the exercises and those accepted by the teachers can access the exam.	-
Written exam	Examinations can be attended by students who have completed, reviewed and explained all exercises. Students on pre-printed exams answer questions asked by rounding off responses, describe images, draw schemes, and solve computational tasks. The written exam is evaluated according to the scale given in the methods of grading.	Exam terms	-
*Oral exam	Only those students who want a higher grade than those obtained on a written exam are issued an oral exam. The requirement to enter an oral exam is that the score of the written exam is reached in the upper score of the score scale, close to the score of the achieved score. They ask questions from different parts of the program content. In the case of 70% and more positive answers, only one step higher final grade than the previously achieved on a written exam can be achieved.	Exam terms	-





## Transport equipment in wood industry

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Calculate the basic characteristics of transported materials in the wood industry that are important for transport and storage: volume, mass, density, bulk density, bulk angle, and granulation.	solving computational tasks, partial exams, practical exercises, final oral exam	A1, A4, B4, B5
Analyse influential factors on the basic characteristics of transported materials.	practical exercises, final oral exam	A1, A4, B4, B5
Calculate the required capacity of transport equipment in the woodworking and processing industry: conveyors capacity (belt conveyors, scraper conveyors, elevators, roller conveyors, chain conveyors), cranes and industrial vehicles depending on the parameters of the technical processing of wood	solving computational tasks, partial exams, final oral exam	A1, A4, B4, B5
Evaluate the transport losses expressed in percentage relative to the transported weight	solving computational tasks, partial exams, final oral exam	B4, B5
Calculate the required driving power of the transport equipment in the woodworking process.	solving computational tasks, partial exams, final oral exam	B4, B5
Calculate the dimensions (diameter, cross-sectional area) and select the steel rope and chain components according to the appropriate standards depending on the load weight, rope and chain strength, and load mode.	solving computational tasks, partial exams, practical exercises, final oral exam	B4, B5
Control the operation of the air conveyor system – determine static pressure drop in the system, dynamic pressure, and airflow rate, and calculate the fan's utility and system utility	solving computational tasks, partial exams, practical exercises, final oral exam	A1, A4, B4, B5
Select the ventilator for the air conveyor system depending on the system parameters	solving computational tasks, partial exams, final oral exam	B4, B5

### 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



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Exercises (calculation and practical exercises)	-	-	-	40	5	1,5
Active participation in lectures and doing homework (A)		Collected extra points can increase the positive grade after the exams and the oral exam for one grade	-	-	5	0,2
Self-done exercises (E)	10%	Partly untidy and incomprehensible, with major corrections and on time	sufficient (2)	-	10	0,3
		Tidy, comprehensible, with major corrections and on time	good (3)			
		Tidy, comprehensible, with minor corrections and on time	very good (4)			
		Tidy, comprehensible, without corrections and on time	excellent (5)			
Partial exams (PE)	65%	min. 55 %	sufficient (2)	4	40	1,5
		min. 66 %	good (3)			
		min. 77 %	very good (4)			
		min. 88 %	excellent (5)			
Oral exam (OE)	25%	min. 60 % correct answers to the questions asked	sufficient (2)	1	15	0,5
		min. 70 % correct answers	good (3)			
		min. 80 % correct answers	very good (4)			
		min. 90 % correct answers	excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(Ex10 + PE65 + OEx25)/100</b>		<b>75</b>	<b>75</b>	<b>5</b>

Evaluation elements	Share in evaluation	Grade rating scale	Grade	Direct teaching hours	Number of average students workload outside the direct teaching	ECTS
Self-done exercises (E)	10%	Partly untidy and incomprehensible, with major corrections and on time	sufficient (2)	-	10	0,3
		Tidy, comprehensible, with major corrections and on time	good (3)			
		Tidy, comprehensible, with minor corrections and on time	very good (4)			
		Tidy, comprehensible, without corrections and on time	excellent (5)			



Final exam (FE) (written and oral)	90 %	60-70%	Sufficient (2)	5	55	2
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(FEx90+Ex10)/100</b>				

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

Evaluation elements	Description	Deadline	Compensation
Attendance of lectures and exercises	The attendance of the students is recorded. A student may justifiably be absent with a maximum of 15% of direct teaching hours.	semester (75 direct hours of lectures and exercises)	-
Active participation in lectures and doing homework (A)	Students can achieve additional points by solving the assignment tasks and solving the tasks gained in the classroom. The first 3-5 students who send out the correctly solved tasks get additional points.		
Self-done exercises (E)	Exercises are attended by groups. As part of the exercise, students need to create 1 exercise in AutoCAD, 2 calculation exercises and 2 reports on practical exercises. Tasks and necessary materials for doing the reports of exercises should be taken over at Merlin. The accuracy, tidiness, and regularity of doing the exercises are evaluated.	in accordance with the agreed terms	
	Students have the opportunity to pass the written part of the exam through 3 partial exams. Each partial exam consists of computational tasks and theoretical questions. The maximum number of points in a single partial exam is 150, a total of 450 on 3 partial exams.	The partial exams take place after 5, 10, 15 terms of lectures and exercises	Students who pass partial exams can access the oral exam
Final written exam (FE)	Exams can be taken by students who have all self-done exercises and reports from practical exercises. Written exam is taken by students who have not passed partial exams. The written exam consists of 3 calculation tasks, every with 5 points. Students who achieve at least 60% of the written assignments can access the oral exam.	exam schedule	-
Oral exam (OE)	Students passing partial exams, or a final written exam can access the oral exam. On oral exam, students are asked questions from different parts of the program content that require understanding and linking of acquired knowledge and application on short problem assignments. The final grade of the subject is obtained according to the formula  <b>(Ex10 + PEx65 + OEx25)/100 or (FEx90+Ex10)/100</b>	exam schedule	

## Physical and health education 3

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
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Describe the structure of the physical exercise class.	exercises, correction and evaluation exercises	E1
Explanation of the impact of physical exercise on health.	exercises, correction and evaluation exercises	E1
Choose fitness exercises designed to strengthen individual muscle groups.	exercises, correction and demonstration	E1
Demonstrate specific exercises with regard to kinesiological activity.	exercises, structural analysis, assistance, correction and evaluation exercises	E1
Organize constructive free time	Exercises and evaluation exercises	E1
Assess personal diet and physical exercise habits.	exercise, diet diary correction and evaluation exercises	E1
Demonstrate general preparatory exercises and stretching exercises.	exercises, description, demonstration, correction	E1
Understanding kinesiology programs and their target orientation.	exercises, description, demonstration, correction	E1
Control emotions and strengthen self-control.	Exercises, correction	E1

## Wood constructions

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Recognition of different wood species, types of wooden and non-wooden materials in the construction of furniture and furnishing.	exercises in computer lab, colloquium, test, final exam	C5
Make a technical drawing of the element and the assembly in terms and cross section according to standards	exercises in computer lab, colloquium, test, final exam	C5
Use technological labels, adhesive joints, mechanical and surface treatments	exercises in computer lab, colloquium, test, final exam	C5
Calculate fits on wooden joints	exercises in computer lab, colloquium, test, final exam	C5
Select characteristic views and cross-sections by determining the position of the cross-sectional plane	exercises in computer lab, colloquium, test, final exam	C5
Apply simple calculations for dimensioning construction elements.	exercises in computer lab, colloquium, test, final exam	C5
Describe and recognize, sketch and technical drawing in orthogonal and	exercises in computer lab, colloquium, test, final exam	C5



axonometric projection show different construction of assembling wooden structures.		
Distinguish joints and ties and use elements for joining and connecting as well as other fittings in compositions of wooden structures	exercises in computer lab, colloquium, test, final exam	C5
Create basic construction documentation of furniture and wood products according to the standards	exercises in computer lab, colloquium, test, final exam	C5
Create a simple element and assembly in a 3D CAD program		C5

### 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	0	1,5
Exercises (E)	5 %	Partly orderly and understandable, with major improvements required and on time	Sufficient (2)	45	15	2
		Orderly, readable, with major improvements required and on time	Good (3)			
		Orderly, readable, with minor improvements required and on time	Very good (4)			
		Orderly, readable, accurate and on time	Excellent (5)			
Colloquium notice in technical drawings (K1)	20%	60-70%	Sufficient (2)	0	15	0,5
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
Colloquium Constructional forms of assembly (K2)	20%	60-70%	Sufficient (2)	0	15	0,5
		71-80%	Good (3)			
		81-90%	Very good (4)			



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		91-100%	Excellent (5)			
Colloquium Constructional forms of assembly (K3)	20%	60-70%	Sufficient (2)	0	30	1
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
Colloquium Constructional forms of assembly (K4)	20%	60-70%	Sufficient (2)	15	30	1
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
Short tests (ST)	15%	50-65%	Sufficient (2)	0	15	0,5
		66-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	$(Vx5+K1x20+K2x20+K3x20+K4x20+KTx15)/100$		90	90	7

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 %	61-70%	Sufficient (2)	3	90	3
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	$(ZIx95+Vx5)/100$				

\* Students who do not pass Colloquium during the semester have to attend the final exam access examination period that makes 95% of the grade, and the remaining 5% is rating from exercises



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

<b>Evaluation elements</b>	<b>Description</b>	<b>Deadline</b>	<b>Compensation</b>
Attendance of lectures and exercise	Students attendance is checked and notified. Student can miss 15% of the classes justifiably the most.	semester (90 hours of direct lectures)	-
Exercise	Exercises will be performed in 14 separate parts. Before the start of each exercise, students are given exercise forms. Punctuality, tidiness, and regular attendance are evaluated (exercise must be delivered on time).	According to specified date	-
Colloquium (K1,K2,K3,K4)	Overall written exam is divided in 4 parts.	K1 – 4th week K2 – 8th week K3 – 13th week K4 – 15th week	Students who do not pass Colloquium can take the written exam
Short tests	Duration 10 min. From 5 to 10 questions.	before the lecture	
Written exam	Students can attend the exam when following conditions are satisfied: Finished and tested exercises, short tests passed. The written exam is evaluated and participates in the final grade of the subject.		-
Oral exam	Students who pass a written exam are asked questions from different parts of the subject content. The final grade of the subject is obtained according to the formula  <b>Vx5+KTx15+PIx65+UIx15/100</b>	In given exam periods	-

## Wood drying technology

### Learning outcomes and evaluation methods

<b>Learning outcomes (LO)</b>	<b>Evaluation methods</b>	<b>Connection with the study program LO</b>
Define the basics of wood anatomy, wood chemistry and other basic properties of wood and their influence on the wood drying process; knowledge of basic units and quantities.	exercises, lectures, exam	C3
Knowledge of the basic properties and characteristics of the most commonly used types of wood in the Republic of Croatia.	exercises, lectures, exam	C3
Explain the theoretical foundations of the wood drying process (seasoning and technical drying).	exercises, lectures, exam	C3



Knowledge of the basic characteristics of moist air important for the wood drying process.	exercises, lectures, exam	C3
Understand the organization of log yards, raw and dry materials, with regard to microclimatic conditions, related to wood drying.	exercises, lectures, exam	C3
List the methods of measuring the water content in the process of wood drying and explain their industrial application.	exercises, lectures, exam	C3
Distinguish kiln dryers according to the type of process and level of equipment. List and describe the main and auxiliary equipment of the wood kiln dryer.	exercises, lectures, exam	C3
Group and identify wood defects in the drying process to reduce the share of decreased value wood value.	exercises, lectures, exam	C3
Choose the most economical drying method with minimal error (seasoning, technical drying or a combination of both).	exercises, lectures, exam	C3
Control and adjust the wood drying process.	exercises, lectures, exam	C3

#### Methods of grading=Taking exam

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	30	2
Exercises (E)	20 %	Partly disordered and incomprehensible, with major corrections and on time	Sufficient (2)	45	15	2
		Neat, legible, with major corrections and on time	Good (3)			
		Neat, legible, with minor corrections and on time	Very good (4)			
		Neat, legible, accurate and on time	Excellent (5)			
Partial exam (PE)	80 %	60-70%	Sufficient (2)		30	1
		71-80%	Good (3)			
		81-90%	Very good (4)			





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		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(Ex20 + PEx80)/100</b>		75	75	5

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)			1
		71-80 %	Good (3)			
		81-90 %	Very good (4)			
		91-100	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(FEx80+Ex20)/100</b>				

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

Evaluation elements	Description	Deadline	Compensation
Attendance of lectures and exercises	The attendance of the students is checked and recorded. Student may justifiably be absent with a maximum of 10 % of direct teaching hours.	semester (75 hours of direct lecturer)	-
Exercises	Exercises are attended in groups. At the beginning of the first exercise, students will receive templates. Exercises are written by hand. For each exercise, the term in which the exercise is handed and evaluated positively, is defined. If the exercise is not handed within the defined time frame or if the exercise is not evaluated positively, then that exercise will be reviewed later after semester ends and the student will receive the seminar assignment and additional computational tasks for each exercise. The accuracy, tidiness and regularity are evaluated.	in accordance with the agreed terms	Exceptionally, in the case of a justified reason.
Written exam	Exam can be attended by students who have completed the exercises. The exam consists of theoretical questions, computational tasks and of the sample that students must describe. For passage students must collect at least 60 % of points.	Exam terms	-
Oral exam	Students who pass a written exam are asked questions from different parts of the program. The final grade of the subject is obtained according to the formula <b>(FEx80+Ex20)/100</b>		-



## Veneer and veneer plywood

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Identification, describe and distinguish veneers according to the type of wood from which they are made	exercises, partial exam, short test, final exam	C4
Identify and describe the technological phases, machines, devices and equipment used in the manufacture of veneers and veneer plywood.	exercises, partial exam, short test, final exam	C4
Choose optimum methods and parameters for making a veneer of greater qualitative and quantitative yield.	exercises, partial exam, short test, final exam	C4
Distinguish the malfunction that arise in the particular technological stages of veneer production and identify the causes of these defects.	exercises, partial exam, short test, final exam	C4
Choose, explain adhesive properties and compare synthetic resins used in the production of veneer plywood.	exercises, partial exam, short test, final exam	C4
Identify different types of veneer plywood and explain their properties.	exercises, partial exam, short test, final exam	C4
Apply the rules for stacking the construction of veneer plywood and determine the optimum construction of the veneer plywood.	exercises, partial exam, short test, final exam	C4
Calculate and choose the appropriate parameters for pressing veneer plywood.	exercises, partial exam, short test, final exam	C4
Differentiate the methods and reasons for the optimization of veneer plywood.	exercises, partial exam, short test, final exam	C4

### 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)	5%	Partly disordered and incomprehensible, with major corrections and on time	Sufficient (2)			



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		Neat, legible, with bigger corrections and on time	Good (3)			
		Neat, readable with minor corrections and on time	Very good (4)	36	0	1,2
		Neat, readable, accurate and timely	Excellent (5)			
Partial exam – sliced veneer technology (PE1)	20%	60-70%	Sufficient (2)	0	15	0,5
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
Partial exam - peeled veneer technology (PE2)	20%	60-70%	Sufficient (2)	0	15	0,5
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
Partial exam - veneer	20%	60-70%	Sufficient (2)	0	15	0,5
plywood technology (PE3)		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
Calculation partial exam (PE4)	20%	60-70%	Sufficient (2)	9	15	0,8
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
Short tests (ST)		60-70%	Sufficient (2)	0	15	0,5
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(Ex5+PE1x20+PE2x20+PE3x20+PE4x20+STx15)/100</b>		<b>75</b>	<b>75</b>	<b>5</b>



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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)			2,8
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(FEx95+Ex5)/100</b>				

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

Evaluation elements	Description	Deadline	Compensation
Attendance of lectures and exercise	Attendance of students is recorded in classes. A student may justifiably be absent with a maximum of 15% of direct teaching hours.	semester (75 hours of direct lecturer)	-
Exercise	Exercises are performed by 10 calculation and 2 laboratory exercises. Before starting the exercises, students will receive training forms. At the end of each exercise, students receive tasks to control the acquired knowledge. The accuracy, precision and the time when the exercise is delivered is evaluated.	According to the appointed time	-
Partial exam (PE1, PE2, PE3)	Partial exam are multiple choice tasks where one or more correct answers are completed. For the correct answer, 3 points are awarded, and for the wrong answer 2 points are deducted.	K1 – 4. week K2 – 8. week K3 – 13. week	-
Partial exam (PE4)	Calculation tasks	15. week	-
Short tests	Duration 15 min. 5 to 10 questions.	Before the beginning of the lecture	-
Written exam	Exam can be accessed by students who have completed exercises and passed short tests. Pre-printed exams round off accurate answers and solve calculation tasks. The written exam is evaluated and participates in the final grade of the course	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 course is obtained according to the formula <b>Ex5+STx15+WEx65+OEx15/100</b>		



## Glues and wood gluing

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Explain the basic theory of adhesion present in wood gluing;	partial or final exam	C6
Distinguish and categorize glue according to source of raw material, hardening method (thermosetting and thermoplastic adhesive groups), and usage (constructive and nonconstructive purposes);	partial or final exam	C6
Repeat the measurement of the basic adhesive properties such as viscosity, density and solid content and explain their significance for the bonding process;	laboratory exercises, corrections, and exercises evaluation	C6
To know, check and control glue factors, substrates, and bond formation processes;	exercises reports, corrections, and exercises evaluation	C6
Suggest the type of adhesive for each material and application of the adhesive assembly;	partial or final exam	C6
Explain the anatomy of the bonded joint, distinguish the factors of strength and durability and formulate their impact on product quality;	exercises reports, corrections, and exercises evaluation	C6
Evaluate the quality of adhesives according to EN and ISO test methods;	laboratory exercises, corrections, and exercises evaluation	C6
Identify, check and recommend basic adhesion parameters (glue application, application uniformity, pressure and compression temperature) and adhesive technology (type of press, adhesive application machines, machines for intensification of curing ...);	partial or final exam	C6

### 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)	30%	Partly neat and partially accurate, corrected twice and not delivered at time	Sufficient (2)			
		Neat, partially accurate, twice corrected and delivered on time	Good (3)			



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		Neat, accurate, completed but not delivered on time or Neat, with minor corrections, completed and delivered on time	Very good (4)	30	30	1,5
		Neat, accurate, completed and delivered on time	Excellent (5)			
1 <sup>st</sup> Partial exam (PE1)	35%	51-64%	Sufficient (2)	1	14	0,5
		65-77%	Good (3)			
		78-89%	Very good (4)			
		90-100%	Excellent (5)			
2 <sup>nd</sup> Partial exam (PE2)	35%	51-64%	Sufficient (2)	1	14	0,5
		65-77%	Good (3)			
		78-89%	Very good (4)			
		90-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(E x 30 + PE1 x 35+ PE2 x 35)/100</b>		<b>47</b>	<b>58</b>	<b>4</b>

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 bodovi
Final exam (FE)	80 %	60-70%	Sufficient (2)	2	28	1,5
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(FE x 80 + E x 30)/100</b>				

**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 presence of students is recorded. The student can justifiably be absent with a maximum of 20% of classes.	semester (30 hours of direct lecturer)	-



Exercise report	Each exercise is reviewed and evaluated. Final grade is the arithmetic mean of the grade of all evaluated exercises. Requirements for accessing the written part of the exams are positively evaluated exercises.	according to Syllabus	Two terms for after deadline delivery
1 <sup>st</sup> Partial exam	The partial exam has a total of 50 points, so 26 points (51%) have to be collected for the passage.	8. week	-
2 <sup>nd</sup> Partial exam	Only students that passed first Partial exam can access to second one. Each of the 10 questions is scored with 5 points. The two partial exams are scored with a total of 100 points, each with 50 points. A total of 51 points is required for the passage (51%). Students who get enough points from both exam parts get the final subject grade. In that case, they can fix the grade by additional access to the oral part of the exam. The final grade is the average score from both partial exams. Oral verification is not mandatory.	15. week	-
Written exam	Examinations can be attended by students who have evaluated exercises and attended classes. The written exam is evaluated and participates in the final grade of the subject. It consists of 10 questions, each scored with 5 points. For passage it is necessary to have 26 points out of a total of 50 points (51%).	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. Theoretical knowledge (from the script) is checked, as well as understanding and linking thematic entities.	Exam terms	It is possible to catch up at the next exam terms, the positive result of the exam written at the previous exam term is acceptable

## Panels from disintegrated wood

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
to explain the significance of panels from fragmented and defibrated wood and to identify the basic board types	laboratory and practical classes, colloquium, final exam	C4
to describe, evaluate and select the basic and auxiliar raw materials for panel production	laboratory and practical classes, colloquium, final exam	C4
to analyse phases of technological processes of panel production	laboratory and practical classes, colloquium, final exam	C4
to identify and explain the basic equipment for production depending of specific board type	laboratory and practical classes, colloquium, final exam	C4
to analyse the influence of natural and synthetic overlay materials on panel properties	laboratory and practical classes, colloquium, final exam	C4
to recognize the specificity of boards given their structure and raw material composition and to recommend the potential use of panels	laboratory and practical classes, colloquium, final exam	C4



### 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)	20%	Partially disordered and incomprehensible, with major corrections and on time	Sufficient (2)	45	15	2
		Orderly, legible, with major corrections and on time	Good (3)			
		Orderly, legible, with minor corrections and on time	Very good (4)			
		Orderly, legible and on time	Excellent (5)			
Colloquium (macroscopic identification of certain board type; PC)	10%	The student determines the board types with the great aid from the examiner	Sufficient (2)	-	30	1
		The student determines the board types with the minor aid from the examiner	Good (3)			
		The student individually and logically determines the board types with the minor aid from the examiner	Very good (4)			
		The student individually and logically determines the board types without the aid from the examiner	Excellent (5)			
Theoretical colloquiums (TC)	70%	50-61%	Sufficient (2)	-	30	1
		62-73%	Good (3)			
		74-85%	Very good (4)			
		86-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(Ex20 + PCx10 + TCx70)/100</b>		<b>75</b>	<b>75</b>	<b>5</b>

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)	70 %	60-70%	Sufficient (2)	2	60	2
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(FEx70 + PCx10 + Ex20)/100</b>				





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

<b>Evaluation elements</b>	<b>Description</b>	<b>Deadline</b>	<b>Compensation</b>
Attendance of lectures and exercises	The attendance is checked, and the attendance of the students is recorded. Student may justifiably be absent with a maximum of 10% of direct teaching hours.	semester (75 hours of direct lecturer)	-
Exercises	Exercises are attended in groups. Through exercises, the students are introduced to the properties of raw materials for fragmented wood panels production, and they produce experimental particleboards and determine their properties. In addition, they determine the properties of commercially produced particleboards and fibreboards and perform the comparison to the properties of experimentally produced panels. At the beginning of the first exercise, students receive templates for all exercises; they are acquainted with the details of each exercise, and how to submit the exercises report. The accuracy, legibility and regularity (submission on time) are evaluated.	in accordance with the agreed terms	Exceptionally, in the case of a justified reason, the student is allowed to compensate his/her absence on the individual exercise
Colloquium (macroscopic identification of certain board type)	On the basis of the knowledge gained on the exercises and through consultation, the students macroscopically determine the 5 samples of fragmented wood panels. Beside the name of the board, students need to know the basic properties of a certain board type and how and where to use them. The colloquium is evaluated and participates in the final evaluation of the subject.	15. week	Students who pass the colloquium can access the exam
Theoretical colloquiums	Theoretical colloquiums consist of five theoretical questions related to knowledge gained on the lectures and exercises. The students are given the printed colloquiums and they answer the questions asked. Theoretical colloquiums are evaluated and participate in the final grade of the subject.	in accordance with the agreed terms	-
Written exam	Only the students which have submitted their exercises reports and have passes the colloquium, can take the final written exam. The students are given the printed exam form and they answer the questions asked. The written exam is evaluated and participates in the final grade of the subject.	Exam terms	-
Oral exam	Students that pass the written exam are asked questions from different parts of the program content. The final grade of the subject is obtained according to the formula <b>(Ex20 + PCx10 + FEx70)/100</b>		-

## Practical work 1

### Learning outcomes and evaluation methods

<b>Learning outcomes (LO)</b>	<b>Evaluation methods</b>	<b>Connection with the study program LO</b>
Apply the acquired knowledge and skills to a realistic model of wood products or wood technology process	Practical work report	B4, C4, C5
Solve the given problem under defined conditions and deadlines	Practical work report	B4, C4, C5
To form a sense of personal responsibility for the execution of assigned tasks on more minor demanding projects	Practical work report	B4, C4, C5



Prepare and organize essential documentation for project development	Practical work report	B4, C4, C5
Make a model or product from wood according to the prepared documentation	Practical work report	B4, C4, C5
Develop three-dimensional dawn on made models or wood products	Practical work report	B4, C4, C5
Prepare a report on the professional project or presentation of the product, material or procedure	Practical work report	B4, C4, C5

### 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
Total:				90	90	3

Evaluation elements	Description	Deadline	Compensation
The work performance of a student during field work	a) High work performance b) Satisfactory work performance c) Weaker performance than expected without justified reasons		
Application of theory in practical work during field teaching	a) It demonstrates the extraordinary skill of applying the theory in practical work b) Recognizes the theoretical framework in practical work c) Does not link the theoretical framework with practical work		
The students skill of solving problems during field work	a) Very skilled in solving problems, innovative and creative b) It is possible to solve the default problem in a familiar way c) Does not show satisfactory problem solving skills		
Ability of a student to make decisions during field work	a) Decides independently, based on thorough analysis of (changing) circumstances b) Decisions are satisfactory in known situations c) It often makes wrong decisions without analysis of the situation		
Ability to collaborate in the team during field teaching	a) Works in line with others, contributes to group relationships and efficiency b) Relationships with others are in accordance with normal circumstances, but does not stand out c) Uncommunicative and withdrawn to the extent of negatively affecting the group		
Communication skills of a student during field work	a) Extremely clear, well-organized and convincing communication, written and spoken b) Satisfying skills of written and spoken communication c) Poor writing skills and speech communication		



Motivation and responsibility of a student during field work	a) High degree of motivation in work and collective and social responsibility b) Satisfactory motivation for work and accountability c) Poor motivated, uninterested and lack of sense of responsibility towards the job		
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## Physical and health education 4

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Describe the structure of the physical exercise class.	exercises, correction and evaluation exercises	E1
Explanation of the impact of physical exercise on health.	exercises, correction and evaluation exercises	E1
Choose fitness exercises designed to strengthen individual muscle groups.	exercises, correction and demonstration	E1
Demonstrate specific exercises with regard to kinesiological activity.	exercises, structural analysis, assistance, correction and evaluation exercises	E1
Organize constructive free time	Exercises and evaluation exercises	E1
Assess personal diet and physical exercise habits.	exercise, diet diary correction and evaluation exercises	E1
Demonstrate general preparatory exercises and stretching exercises.	exercises, description, demonstration, correction	E1
Understanding kinesiology programs and their target orientation.	exercises, description, demonstration, correction	E1
Control emotions and strengthen self-control.	Exercises, correction	E1

## Production Organization

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Define the basic concepts of organizational science.	exercises, tests, exam	D1



Recognize the organizational and technological specifics of production in wood processing and furniture manufacturing.	exercises, tests, exam	D1
Plan and analyse the study of time.	exercises, tests, exam	D1
Review and recommend streamlining of work.	exercises, tests, exam	D1
Identify the characteristic production processes in wood processing.	exercises, tests, exam	D1
Distinguish processes in research and development and propose the development of new products.	exercises, tests, exam	D1
Distinguish processes in procurement, storage and logistics, plan procurement, recommend a procurement model and manage procurement and storage.	exercises, tests, exam	D1
Evaluate the capacities of technological processes.	exercises, tests, exam	D1
Use the principles of designing technological systems in industrial wood processing.	exercises, tests, exam	D1
Organize production, manage production processes.	exercises, tests, exam	D1

### Methods of grading=Taking exam

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	0	1,5
Exercises (E)	10%	Partly disordered and incomprehensible, with major corrections and on time	Sufficient (2)	45	45	3
		Neat, legible, with major corrections and on time	Good (3)			
		Neat, legible, with minor corrections and on time	Very good (4)			
		Neat, legible, accurate and on time	Excellent (5)			
Test 1 (T1)	45%	60-70%	Sufficient (2)	1	37,5	1,25
		71-80%	Good (3)			
		81-90%	Very good (4)			



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		91-100%	Excellent (5)			
Test 2 (T2)	45%	60-70%	Sufficient (2)	1	37,5	1,25
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
		60-70%	Sufficient (2)			
<b>TOTAL</b>	<b>100 %</b>	<b>(Ex10 + T1x45 + T2x45 )/100</b>		90	120	7

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)	3	75	2,5
		71-80 %	Good (3)			
		81-90 %	Very good (4)			
		91-100	Excellent (5)			
<b>TOTAL</b>	<b>100 %</b>	<b>(FEx90+Ex10)/100</b>				

\* Students who during the semester do not pass the subject by a written test shall attend the exam, that makes 90% of the grade, and the remaining 10% 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 exercises	The attendance of the students are checked and recorded. Student may justifiably be absent with a maximum of 15 % of direct teaching hours.	semester (90 hours of direct lecturer)	-
Exercises	Exercises are attended in groups. For each exercise, students receive individual templates - tasks. The deadline for the exercise is two weeks and if the exercise is not timely submitted and the positive evaluation is not obtained, the student gets an additional task. The accuracy, tidiness and regularity of exercise are evaluated (time-honoured exercises).	in accordance with the agreed terms	Exceptionally, in the case of a justified reason.
Test 1	Students who have a positive assessment of the first five exercises and who have not abstained from teaching more than 15% can access the first test. Test 50% comprise the knowledge acquired in lectures (theory), and 50% on the knowledge acquired exercises (tasks).	8 <sup>th</sup> week	Students who pass the first test can access the second test.
Test 2	Students who have a positive assessment of all exercises and who have not abstained from teaching more than 15% can access the second test. Test 50% comprise the knowledge acquired in lectures (theory), and 50% on the knowledge acquired exercises (tasks).	15 <sup>th</sup> week	Students who pass 1 <sup>st</sup> and 2 <sup>nd</sup> test are exempted from the exam.



Written exam	Students who have a positive assessment of all exercises can attend the exam. The exam consists of three computational tasks. 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 asked questions from different parts of the program. The final grade of the subject is obtained according to the formula <b>Ex10+EEIx45+ OEx45/100</b>		-

## Final wood processing

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Explain the basic concepts about the technological processes of final wood processing	partial or final exam	C6
Distinguish and categorize basic final products (eg chair, bed, table, wardrobe etc);	partial or final exam	C6
Evaluate, draw up a budget and recommend the quantity of wood and non-woven materials needed for the production of certain final products or elements of final products;	laboratory exercises, corrections, and exercises evaluation	C6
Identify, describe and choose the most technologically acceptable (optimal) formatting (cutting) of wood elements in the production of final products;	exercises reports, corrections, and exercises evaluation	C6
Design the order of joining assemblies and assemblies, and the order of assembling elements into a finished product;	partial or final exam	C6
Use basic measuring equipment e.g. measuring strip, calliper, micrometre, comparator and line for measuring dimensions and processing accuracy and to know the working principle of modern measuring instruments such as 3D scanners;	exercises reports, corrections, and exercises evaluation	C6
Identify and distinguish factors that have the greatest impact on the quality of a particular wood processing;	laboratory exercises, corrections, and exercises evaluation	C6
Evaluate the possibilities of applying new technologies and technological processes with respect to the production program and existing manufacturing technology of the company;	partial or final exam	C6



### 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	0	1,5
Exercises (E)	20%	Partly neat and partially accurate, corrected twice and not delivered at time	Sufficient (2)	45	45	3,5
		Neat, partially accurate, twice corrected and delivered on time	Good (3)			
		Neat, accurate, completed but not delivered on time or Neat, with minor corrections, completed and delivered on time	Very good (4)			
		Neat, accurate, completed and delivered on time	Excellent (5)			
1 <sup>st</sup> Partial exam (PE1)	40%	51-64%	Sufficient (2)	1	21,5	0,75
		65-77%	Good (3)			
		78-89%	Very good (4)			
		90-100%	Excellent (5)			
2 <sup>nd</sup> Partial exam (PE2)	40%	51-64%	Sufficient (2)	1	21,5	0,75
		65-77%	Good (3)			
		78-89%	Very good (4)			
		90-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(E x 20 + PE1 x 40+ PE2 x 40)/100</b>		92	88	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%	Sufficient (2)	2	43	1,5
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(FE x 80 + E x 20)/100</b>				



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

Evaluation elements	Description	Deadline	Compensation
Attendance of lectures and exercises	The attendance is checked, and the presence of students is recorded. The student can justifiably be absent with a maximum of 20% of classes.	semester (45 hours of direct lecturer)	-
Exercise report	Each exercise is reviewed and evaluated. Final grade is the arithmetic mean of the grade of all evaluated exercises. Requirements for accessing the written part of the exams are positively evaluated exercises.	according to Syllabus	Two terms for after deadline delivery
1 <sup>st</sup> Partial exam	The partial exam has a total of 50 points, so 26 points (51%) have to be collected for the passage.	8. week	-
2 <sup>nd</sup> Partial exam	Only students that passed first Partial exam can access to second one. Each of the 10 questions is scored with 5 points. The two partial exams are scored with a total of 100 points, each with 50 points. A total of 51 points is required for the passage (51%). Students who get enough points from both exam parts get the final subject grade. In that case, they can fix the grade by additional access to the oral part of the exam. The final grade is the average score from both partial exams. Oral verification is not mandatory.	15. week	-
Written exam	Examinations can be attended by students who have evaluated exercises and attended classes. The written exam is evaluated and participates in the final grade of the subject. It consists of 10 questions, each scored with 5 points. For passage it is necessary to have 26 points out of a total of 50 points (51%).	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. Theoretical knowledge (from the script) is checked, as well as understanding and linking thematic entities.	Exam terms	It is possible to catch up at the next exam terms, the positive result of the exam written at the previous exam term is acceptable

## Basic statistics

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Identify and distinguish numeric and categorical variable types (continuous, discrete, dichotomous, nominal, ordinal). Choose the appropriate graphs. Create a frequency table. Calculate the central tendency measures and analyse them. Calculate variability measures and analyse them. Calculate median and quartiles and analyse them.	Hand calculation exercises, Partial exams, Written and Oral Exam	A1
Apply the basics of probability. Calculate probabilities.	Hand calculation exercises, Partial exams, Written and Oral Exam	A1





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Differentiate, sketch and apply theoretical distribution: normal, T and binomial distribution.	Hand calculation exercises, Partial exams, Written and Oral Exam	A1
Apply different sampling methods: a random, stratified, systematic sample. Know the main essence of the central boundary theorem and the standard error.	Hand calculation exercises, Partial exams, Written and Oral Exam	A1
Estimate (point estimate) the arithmetic mean, the standard deviation and the proportions of the population	Hand calculation exercises, Partial exams, Written and Oral Exam	A1
Calculate and interpret the interval estimate of the arithmetic mean, the standard deviation and the proportions of the population.	Hand calculation exercises, Partial exams, Written and Oral Exam	A1
Calculate, draw and interpret individual index numbers.	Hand calculation exercises, Partial exams, Written and Oral Exam	A1
Interpret and draw the linear trend equation Calculate the prediction using a linear trend equation.	Hand calculation exercises, Partial exams, Written and Oral Exam	A1

**Methods of grading**

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
Lectures	-		-	30	15	1,5
Exercies	-	-	-	30	30	2
Partial exams	100%	65-74	Sufficient (2)	4	15	0,5
		75-84	Good (3)			
		85-94	Very good (4)			
		95-100	Excellent (5)			
Final exam	100%	60-70	Sufficient (2)	3		
		71-80	Good (3)			
		81-90	Very good (4)			
		91-100	Excellent (5)			



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

<b>Evaluation elements</b>	<b>Description</b>	<b>Deadline</b>	<b>Compensation</b>
Attendance of lectures and exercises	The attendance of students on lectures and exercises is checked. The student may not attend a maximum of 4 hours of lecture classes and 4 hours of Exercises. The student have to submit correctly solved 5 exercises.	semester (60 hours of direct lecturer)	-
Partial exams	During the course, students write two partial exams each with 5 tasks total 100 (2 * 50) points. The minimum number of points that can be obtained by the partial exam is 20. If they collect at least 65 points in two partial exams, they can pass exam without the final exam.	During the semester	
Written exam	Exams can be accessed by students who have received a signature. The written part of the exam consists of 5 tasks totalling 100 points.	Exam terms	
Oral exam	Students who have passed the written part of the exam access the oral exam.	Exam terms	

## Wood in construction

### Learning outcomes and evaluation methods

<b>Learning outcomes (LO)</b>	<b>Evaluation methods</b>	<b>Connection with the study program LO</b>
Identify the prominent families of wood construction products and connect their end-use requirements with design and construction types and material properties	exam	B3
To appoint and explain the ecological features of wood as a building material, the importance of maintaining its durability and the possibilities of wood recycling.	exam	C7
To explain the dimensional and structural limitations of wood and propose and evaluate their improvement methods (laminating, structural and engineering connections).	exam	B3
To distinguish, group, and argument the technical properties of wood essential for construction, explain and evaluate the aesthetic, economic and traditional values of wood for construction.	exam	B2
To identify, explain and group factors of durability and risk classes to the durability of construction products and wood buildings and suggest and design the measures to overcome these risks	practice exercises, exam	C6, C7



To adapt or design a set of details and measures of integral (physical, structural, surface and biological) protection of a simple wood building or wood construction product	practice exercises, exam	C6, C7
Connect the type of window and door with basic functional requirements, connect the details into a functional unit, and design and illustrate the final product.	practice exercises, exam	C6, C7
To describe types of wood floor coverings and connect the product type with the basic technical properties and functional requirements	exam	C8

### 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)	25%	Mostly inaccurate, with major corrections	Sufficient (2)	30	15	1,5
		Mostly accurate, with corrections	Good (3)			
		Exact, with minor corrections	Very good (4)			
		Accurate and error-free	Excellent (5)			
Exam (PE)	75%	60-70%	Sufficient (2)		45	1,5
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(Lxy0+Exy0 + PExy0)/100</b>		60	60	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 bodovi
Final exam (FE)	80 %	60-70%	Sufficient (2)			1,5
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			



<b>TOTAL</b>	<b>100%</b>	<b>(FExy0+Exy0)/100</b>
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**Detailed description of evaluation elements for lecturer, excercises, partial or final exams:**

<b>Evaluation elements</b>	<b>Description</b>	<b>Deadline</b>	<b>Compensation</b>
Attendance of lectures and exercises	The attendance is checked and recorded. Exercises are attended by groups. A student may justifiably be absent with a maximum of 15% of direct teaching hours.	semester (60 hours of direct lecturer)	-
Partial exam	Exercises are organised in groups. As part of the exercise, 6 practical exercises from the topic of physical and structural protection of wood, surface stability and technological construction of wood construction products are performed. At the beginning of the first exercise, students are introduced to the rules of preparation, teaching, and assessment of exercises.	15. week	
	<b>The accuracy, regularity, and regularity (time-honoured exercises)</b>		
Written exam	The exam can be attended by students whose exercises were evaluated positively. The written exam is evaluated and participates in the final grade of the subject.	Exam terms	
Oral exam	Students get questions from different part of the subject program. Final mark of subject is achieved from the formula: <b>Ex5+C1x5+C2x15+Ex75/100</b>		

## Marketing of wood products

### Learning outcomes and evaluation methods

<b>Learning outcomes (LO)</b>	<b>Evaluation methods</b>	<b>Connection with the study program LO</b>
To carry out a market research process using the customer survey methodology and to evaluate the demand for wood products based on the derived consumption method	Exercises evaluation, partial exams, final exam	D2
To decide about marketing strategies in woodworking and furniture manufacturing companies and design strategic product planning processes	Exercises evaluation, partial exams, final exam	D2
To establish a business portfolio of business attractiveness business and business power of companies and to create a multifactor portfolio matrix	Exercises evaluation, partial exams, final exam	D2
To plan the life span of the best-selling products in the production program	Exercises evaluation, partial exams, final exam	D2



To create a product marketing strategy at each stage of the product life cycle	Exercises evaluation, partial exams, final exam	D2
To analyse wood products customers' behaviour based on information in the recent years	Exercises evaluation, partial exams, final exam	D2
To develop a market prediction of furniture sales and to plan furniture consumption based on the determined quantity of products sold in the past period	Exercises evaluation, partial exams, final exam	D2
To design wood products and furniture distribution channels and to recommend the application of the appropriate distribution channels	Exercises evaluation, partial exams, final exam	D2
To suggest cost allocation concerning stages in the product development process and form the price of a particular product based on price and competitiveness	Exercises evaluation, partial exams, final exam	D2
To develop a promotional plan for a wood industry company	Exercises evaluation, partial exams, final exam	D2
To assess the most common business, merchandise and financial risks in industry company and to suggest transportation documentation for wood products	Exercises evaluation, partial exams, final exam	D2

### 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)	20%	Partly orderly and understandable, with major improvements required and on time	Sufficient (2)	28	30	2
		Orderly, readable, with major improvements required and on time	Good (3)			
		Orderly, readable, with minor improvements required and on time	Very good (4)			
		Orderly, readable, accurate and on time	Excellent (5)			
Partial exam 1 (PE1)	40%	51-70%	Sufficient (2)	1	15	0,5
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			



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Partial exam 2 (PE2)	40%	51-70%	Sufficient (2)	1	15	0,5
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(E20 + PE1x40+PE2x40)/100</b>		60	60	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 bodovi
Final exam (FE)	100 %	60-70%	Sufficient (2)	2	30	1
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(FE100)/100</b>				

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

Evaluation elements	Description	Deadline	Compensation
Attendance of lectures and exercises	Students attendance is checked and notified. Student can miss 15% of the classes justifiably the most.	semester (60 hours of direct lecturer)	-
	Exercises are made individually. As part of the exercise, 10 individual tasks are performed (one of 10 exercises, exercise 5 is done in the form of seminar work and is presented in the last term of teaching, before the 2nd semester) At the beginning of the first exercise, students are provided with instructions on how to perform the exercises and the appearance of the collar, liner and insertion sheet in which they will print in the form. The accuracy, regularity and regularity (time-honoured exercises) Exercises carry 50 points.	According to a time schedule	
Partial exam I	First partial exam can be attended by students who did not miss more than 15% of lectures and exercises. and who have corrected and signed exercises 1-5. The I. Partial exam is 100 points, and it covers the issues regarding until the time of partial exam.	6th. week	
Partial exam II	Second partial exam can be attended by students who did not miss more than 15% of lectures and exercises. and who have corrected and signed exercises 1-10 and	13th. week	
	who have accomplished more than 50 points in the partial exam I. The II. Partial exam is 100 points.		
Written exam	Students who did not receive a positive assessment from the exercise and the partial exams (less than 51% of the total score) or are not satisfied with a final grade will approach the written exams according to certain examination deadlines. The written exam consists of 3-4 assignments (depending on the complexity of the assignment, with each assignment max number of points)	Exam terms	



Oral exam	<p>The requirement for the oral exam is 51 % on the written exam. The score obtained on the oral exam is the final grade in the 100% ratio. Note: The person who passed the exam via partial exams and obtained the right to a final grade, and is not satisfied with the final grade, can access the oral exam, but in that case may score a grade higher than the grade obtained by passing the exam through a partial exam .</p> <p>The grade given on oral exam is final and it makes 100% of the grade.</p>	Exam terms	
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## Practical work 2

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Apply the acquired knowledge and skills to a realistic model of wood products or wood technology process	Practical work report	B4, C4, C5, C6, C8
Solve design and technological problems independently or as a team	Practical work report	B4, C4, C5, C6, C8
Develop the ability to recognize variants of wood and non-wood materials and technological processes	Practical work report	B4, C4, C5, C6, C8
Define variants of materials, product construction and technological conditions and processes based on defined criteria	Practical work report	B4, C4, C5, C6, C8
Prepare and organize the primary documentation for the development and presentation of the project	Practical work report	B4, C4, C5, C6, C8
Prepare a product and a report on the professional project; prepare a presentation of a product, material or process; present a product, process or innovation at a conference or exhibition	Practical work report	B4, C4, C5, C6, C8

### 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
Total:				90	90	3

Evaluation elements	Description	Deadline	Compensation
The work performance of a	a) High work performance b) Satisfactory work performance c) Weaker performance than expected without justified reasons		



student during field work			
Application of theory in practical work during field teaching	a) It demonstrates the extraordinary skill of applying the theory in practical work b) Recognizes the theoretical framework in practical work c) Does not link the theoretical framework with practical work		
The student's skill of solving problems during field work	a) Very skilled in solving problems, innovative and creative b) It is possible to solve the default problem in a familiar way c) Does not show satisfactory problem solving skills		
Ability of a student to make decisions during field work	a) Decides independently, based on thorough analysis of (changing) circumstances b) Decisions are satisfactory in known situations c) It often makes wrong decisions without analysis of the situation		
Ability to collaborate in the team during field teaching	a) Works in line with others, contributes to group relationships and efficiency b) Relationships with others are in accordance with normal circumstances, but does not stand out c) Uncommunicative and withdrawn to the extent of negatively affecting the group		
Communication skills of a student during field work	a) Extremely clear, well-organized and convincing communication, written and spoken b) Satisfying skills of written and spoken communication c) Poor writing skills and speech communication		
Motivation and responsibility of a student during field work	a) High degree of motivation in work and collective and social responsibility b) Satisfactory motivation for work and accountability c) Poor motivated, uninterested and lack of sense of responsibility towards the job		

## Production planning and calculation

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
To analyse and select the profile of the company's wood processing and furniture manufacturing business for possible business collaboration based on calculated and analysed performance and safety performance indicators	Exercises evaluation, partial exams, final exam	D1, D2
To analyse a fundamental principles of financial accounting (Balance Sheet, Profit and Loss Account, Cash Flow Statement)	Exercises evaluation, partial exams, final exam	D1, D2
To recommend the type of calculation and to calculate a cost price per unit in wood processing	Exercises evaluation, partial exams, final exam	D1, D2
To recommend the type of calculation and to calculate a cost price per unit in furniture manufacturing	Exercises evaluation, partial exams, final exam	D1, D2





To create a cost price per one unit of wood produces and furniture by applying calculation incomplete costs calculation method	Exercises evaluation, partial exams, final exam	D1, D2
To suggest a method of calculating depreciation as a specific expense of fixed assets	Exercises evaluation, partial exams, final exam	D1, D2
To calculate productivity cost (contribution margin) of selected wood products in wood processing and furniture manufacturing companies	Exercises evaluation, partial exams, final exam	D1, D2
To plan production costs classification in relation to changes in the scope of production activities (fixed costs, variable costs, mixed costs, discretionary costs)	Exercises evaluation, partial exams, final exam	D1, D2
To plan production costs classification according to their natural characteristics (staff costs, material costs, depreciation, service costs, non-material / other costs, financing costs)	Exercises evaluation, partial exams, final exam	D1, D2
To create a relationship model of costs, revenue and change of business activity	Exercises evaluation, partial exams, final exam	D1, D2
To analyse the cost structure of the company and determine cost-related priorities and evaluate the type of calculations that the company applies in forming the cost of the product's cost and decide which type of calculation would be most applicable to the company being monitored.	Exercises evaluation, partial exams, final exam	D1, D2
To select loan repayment models in wood processing and furniture manufacturing companies	Exercises evaluation, partial exams, final exam	D1, D2

### 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)	20%	Partly orderly and understandable, with major improvements required and on time	Sufficient (2)	43	15	1,5
		Orderly, readable, with major improvements required and on time	Good (3)			
		Orderly, readable, with minor improvements required and on time	Very good (4)			
		Orderly, readable, accurate and on time	Excellent (5)			
Seminar paper (SP)	5%	Partly orderly and understandable, with major improvements required and on	Sufficient (2)	-	5	0,5



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		time				
		Orderly, readable, with major improvements required and on time	Good (3)			
		Orderly, readable, with minor improvements required and on time	Very good (4)			
		Orderly, readable, accurate and on time	Excellent (5)			
Partial exam 1 (PE1)	40%	51-70%	Sufficient (2)	1	30	1
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
Partial exam 2 (PE2)	40%	51-70%	Sufficient (2)	1	30	1
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(E20 + PE1x40+PE2x40)/100</b>		<b>75</b>	<b>80</b>	<b>5</b>

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 %	60-70%	Sufficient (2)	2	30	1
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(FE100)/100</b>				

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

Evaluation elements	Description	Deadline	Compensation
Attendance of lectures and excercises	Students attendance is checked and notified. Student can miss 15% of the classes justifiably the most.	semester (60 hours of direct lecturer)	-
	Excercises are made individually. As part of the exercise, 10 individual tasks are performed (one of 10 excercises, exercise 5 is	According to a time schedule	



	done in the form of seminar work and is presented in the last term of teaching, before the 2nd semester) At the beginning of the first exercise, students are provided with instructions on how to perform the exercises and the appearance of the collar, liner and insertion sheet in which they will print in the form. The accuracy, regularity and regularity (time-honoured exercises) Exercises carry 50 points.		
Partial exam I	First partial exam can be attended by students who did not miss more than 15% of lectures and exercises, and who have corrected and signed exercises 1-5. The 1. Partial exam is 100 points, and it covers the issues regarding until the time of partial exam.	7th. week	
Partial exam II	Second partial exam can be attended by students who did not miss more than 15% of lectures and exercises, who have corrected and signed exercises 1-10 and who accomplished more than 50 points in the partial exam I. The II. Partial exam is 100 points.	15th. week	
Written exam	Students who did not receive a positive assessment from the exercise and the partial exams (less than 51% of the total score) or are not satisfied with a final grade will approach the written exams according to certain examination deadlines. The written exam consists of 3-4 assignments (depending on the complexity of the assignment, with each assignment max number of points)	Exam terms	
Oral exam	The requirement for the oral exam is 51 % on the written exam. The score obtained on the oral exam is the final grade in the 100% ratio. Note: The person who passed the exam via partial exams and obtained the right to a final grade, and is not satisfied with the final grade, can access the oral exam, but in that case may score a grade higher than the grade obtained by passing the exam through a partial exam .  The grade given on oral exam is final and it makes 100% of the grade.	Exam terms	

## Wood finishing

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Differentiate the sanding materials for various types of wood, wood materials, wood finishes according to backing, abrasive grain and grain's hardness and toughness, grit size and amount of grains.	laboratory exercises, exams, exam	midterm A1, A4, B4, C8, E1
Differentiate the properties and composition of wood staining materials (water-based stains, alcohol-based stains, oil stains, reactive stains and wood bleaching materials.	laboratory exercises, exams, exam	midterm A1, A4, B4, C8, E1
Compare the properties of a wood coatings based on natural resins, oils and waxes, with coatings based on synthetic resins.	laboratory exercises, exams, exam	midterm A1, A4, B4, C8, E1



Identify the advantages and disadvantages of certain methods of applying varnishes (manual application, applying by spraying, curtain coating, dipping, roller coating, flow coating, vacuum coating).	laboratory exams, exam	exercises,	midterm	A1, A4, B4, C8, E1
Measure the viscosity of the wood coating material, density, dry solid, the film thickness, application rate.	laboratory exams, exam	exercises,	midterm	A1, A4, B4, C8, E1
To compare the methods of curing (drying) coatings on wood (convection drying, infrared radiation, microwaves, UV radiation, electron beam irradiation).	laboratory exams, exam	exercises,	midterm	A1, A4, B4, C8, E1
Calculate the consumption of wood finishing materials	laboratory exams, exam	exercises,	midterm	A1, A4, B4, C8, E1
To evaluate the safety and health risks in the finishing room (explosiveness, flammability, health hazard, danger to the environment).	laboratory exams, exam	exercises,	midterm	A1, A4, B4, C8, E1
Write professional paper on a given topic in the field of wood finishing.	seminars			A1, A4, B4, C8, E1

### 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)	12 %	1 point for each task (worksheet) that was submitted on time, 4 points for project task	-	45	15	2
Partial exam (PE)	30 %	Students can achieve a maximum of 30 points. To gain access to the second partial exam must achieve a minimum of 15 points.	-	1	15	0,5
Partial exam (PE)	30 %	Students can achieve a maximum of 30 points.	-	1	15	0,5
Homework	4 %	1 point for each homework that was submitted on time	-	-	4	0,1
Seminar paper	20 %	The maximum possible number of points scored is 20	-	-	22	0,8
Presentation of seminar paper	4 %	4 points for a held presentation	-	-	4	0,1
<b>TOTAL</b>	<b>100%</b>	From all the elements of monitoring and checking the student can achieve a maximum height of assessment of 100 points, which makes 100 % of the grade. For the passing grade, the student must have a	-	77	75	5



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	minimum of 50 points or 50 % of the grades. Scale rating is as follows:				
	50 – 60 %	Sufficient (2)			
	61 -75 %	Good (3)			
	76 – 90 %	Very good (4)			
	91 – 100 %	Excellent (5)			

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 %	60-70%	Sufficient (2)	2	30	1
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>					

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

Evaluation elements	Description	Deadline	Compensation
Attendance of lectures and exercises	The attendance of the students is recorded. Students are allowed 20 % absence from lectures and 10 % from exercises. Exercises are attending in groups. Exercises tasks are submitted within a predefined time limit, and timely delivery of the correct work sheets is scored.	semester	-
Submission of worksheets from laboratory work (excercises)	Exercises are attended in groups. Students must submit worksheets in a predefined period of time and timely submitted worksheets are scored.	According to weekly class schedule	-
Partial exams	There are two partial exams. Each brings 30 points. At the first partial exam a student must achieve at least 50 % to gain access to second partial exam.	VIII week XV week	-
Seminar paper	Students choose the theme of the seminar work from the proposed themes in MERLIN. Seminars are scored according to the given criteria.	XIII; XIV week	-
Presentation	By presenting a seminar, the student receives four additional points	XII; XIV week	-
Homework	Each on-time delivered homework brings 1 point	According to weekly class schedule	-
Written exam	A student who failed to pass an examination by continuous collection of points during the semester has the right to attend the exam. Prior to exam seminar paper and exercise worksheets must be submitted for review.	Exam terms	-
Oral exam	Prerequisite for oral exam is minimum score of 50 in written exam	Exam terms	-



## Practice

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Apply the acquired knowledge and skills gained during the study in specific situations	Practical work report	A4, B4, B5, C1, C2, C3, C4, C8, D2
Apply communication skills in a new work environment	Practical work report	A4, B4, B5, C1, C2, C3, C4, C8, D2
Record and comment on characteristics of working procedures, wood product production and business	Practical work report	A4, B4, B5, C1, C2, C3, C4, C8, D2
Compare the success of wood production according to the given criteria	Practical work report	A4, B4, B5, C1, C2, C3, C4, C8, D2
To form a sense of responsibility and motivation for the execution of assigned tasks	Practical work report	A4, B4, B5, C1, C2, C3, C4, C8, D2
Prepare a written report on professional practice	Practical work report	A4, B4, B5, C1, C2, C3, C4, C8, D2

### 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
Total:				80	80	3

Evaluation elements	Description	Deadline	Compensation
The work performance of a student during field work	a) High work performance b) Satisfactory work performance c) Weaker performance than expected without justified reasons		
Application of theory in practical work during field teaching	a) It demonstrates the extraordinary skill of applying the theory in practical work b) Recognizes the theoretical framework in practical work c) Does not link the theoretical framework with practical work		
The student's skill of solving problems during field work	a) Very skilled in solving problems, innovative and creative b) It is possible to solve the default problem in a familiar way c) Does not show satisfactory problem solving skills		
Ability of a student to make decisions during field work	a) Decides independently, based on thorough analysis of (changing) circumstances b) Decisions are satisfactory in known situations c) It often makes wrong decisions without analysis of the situation		



Ability to collaborate in the team during field teaching	a) Works in line with others, contributes to group relationships and efficiency b) Relationships with others are in accordance with normal circumstances, but does not stand out c) Uncommunicative and withdrawn to the extent of negatively affecting the group		
Communication skills of a student during field work	a) Extremely clear, well-organized and convincing communication, written and spoken b) Satisfying skills of written and spoken communication c) Poor writing skills and speech communication		
Motivation and responsibility of a student during field work	a) High degree of motivation in work and collective and social responsibility b) Satisfactory motivation for work and accountability c) Poor motivated, uninterested and lack of sense of responsibility towards the job		

## Operations Management I

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Define production functions and production strategies	Project assignment, oral exam	D1
Analyse concepts for planning and production management	Exercises in computer practicum, project assignment, seminar work, oral exam	D1
Prepare the technical documentation	Exercises in computer practicum, project assignment, seminar work, oral exam	D1
Organize technological, operational preparation of production and distribution of jobs	Exercises in computer practicum, project assignment, written and oral exam	D1
Connect documentation of business and manufacturing systems companies wood processing and furniture production	Exercises in computer practicum, project assignment, written and oral exam	D1
Modelling production process management systems in a wood processing and furniture manufacturing company	Exercises in Computer Practice, Project Task, Oral Exam	D1
Recommend a software solution for integrated production planning and management	Project assignment, seminar work, oral exam	D1
Apply the acquired knowledge and skills from the content of the course items to solve a specific task	Project assignment, seminar work, oral exam	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)	-	-	-	28	0	1
Exercises (E)	25%	Partly disordered and incomprehensible, with major corrections and on time	Sufficient (2)	28	0	1
		Clean, easy, with bigger corrections and on time	Good (3)			
		Clean, easy, with minor corrections and on time	Very good (4)			
		Clean, easy, accurate and timely	Excellent (5)			
Seminar paper (SP)	5%	The student is exhibiting with the help of the examiner	Sufficient (2)	4	10	0,5
		Student Exposes Using Examiner	Good (3)			
		It is self-explanatory and logical with little help from the examiner	Very good (4)			
		Self-explanatory and logical, without any help	Excellent (5)			
Final exam (FE)	70%	60-70%	Sufficient (2)	0	15	0,5
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(Vx25 + Sx5+Ix70)/100</b>		<b>60</b>	<b>25</b>	<b>3</b>

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 bodovi
Final exam (FE)	100%	60-70%	Sufficient (2)	5	15	0,7
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(FEx 100) / 100</b>				





**Detailed description of evaluation elements for lecturer, seminars, excercises and final exams:**

Evaluation elements	Description	Deadline	Compensation
Lectures + Exercises	<ul style="list-style-type: none"> <li>The attendance is checked, and the attendance of the students is recorded. A student may justifiably be absent with a maximum of 15% of direct teaching hours.</li> </ul>	semester (60 hours of direct lecturer)	-
Exercises	<ul style="list-style-type: none"> <li>Exercises are attended by groups.</li> <li>4 project individual tasks are performed within the exercise.</li> <li>In the introductory lecture, students will receive instructions on the layout of the exercises - the folder, the jumper and the proposal sheet, in which they will correspond to the set tasks in printed form.</li> <li>At the beginning of the exercise, students will receive templates for project assignments. Exercises are surrendered gradually after each course.</li> <li>The accuracy, regularity and regularity are evaluated (time-honoured exercises)</li> <li>Exercises carry 25 points and together with exam scores make up 100 points.</li> </ul>	According to the agreed terms	Exceptionally, in the case of a justified reason, student does the absence of a single exercise
Seminars	<ul style="list-style-type: none"> <li>Seminar work is done independently</li> <li>At the beginning of the third lecture, students receive topics that are electronically chosen, and instructions and literature related to the work</li> <li>In the last lecture, each student presents an independent seminar work</li> <li>Questions are raised from the parts of the seminar work</li> </ul>	15 week	
Partial exam	<ul style="list-style-type: none"> <li>Exam can be attended by students who have completed, submitted and corrected exercises.</li> <li>Students on pre-made exams to solve the task.</li> </ul>	Exam terms	-
	<ul style="list-style-type: none"> <li>Written Exam (We) is evaluated and participates 20% in the final grade of the subject</li> </ul>		
Written exam	<ul style="list-style-type: none"> <li>Students who pass a written exam are asked for oral questions from different parts of the subject's program content.</li> <li>The oral exam (Uispt) participates 50% in the final grade of the subject</li> <li>The total rating is calculated according to the formula:  <math>(E \times 25 + S \times 5 + We \times 20 + Oe \times 50) / 100</math></li> </ul>	Exam terms	-



## Technological properties of wood

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Determining the influence of physical and mechanical properties of wood on technological characteristics of wood processing	Exercises evaluation, partial exams, final exam	A1, A4, B1, B3
Determining the impact of wood defects on technological characteristics of wood processing	Exercises evaluation, partial exams, final exam	A1, A4, B1, B3
Determining the basic technological characteristics of wood important for certain types of mechanical wood processing	Exercises evaluation, partial exams, final exam	A1, A4, B1, B3
Evaluation of technological characteristics of wood for certain types of mechanical wood processing	Exercises evaluation, partial exams, final exam	A1, A4, B1, B3
Practical recognition of technological characteristics of domestic and foreign types of wood	Exercises evaluation, partial exams, final exam	A1, A4, B1, B3
Evaluation of wood types according to technological characteristics of wood	Exercises evaluation, partial exams, final exam	A1, A4, B1, 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)	-	-	-	30	15	1,5
Exercises (E)	70%	Partly orderly and understandable, with major improvements required and on time	Sufficient (2)	30	0	1
		Orderly, readable, with major improvements required and on time	Good (3)			
		Orderly, readable, with minor improvements required and on time	Very good (4)			
		Orderly, readable, accurate and on time	Excellent (5)			
Partial exam 1 (PE1)	30%	61-70%	Sufficient (2)	1	14	0,5
		71-80%	Good (3)			



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		81-90%	Very good (4)		
		91-100%	Excellent (5)		
		71-80%	Good (3)		
		81-90%	Very good (4)		
		91-100%	Excellent (5)		
<b>TOTAL</b>	<b>100%</b>	<b>(Ex70 + PE1x30)/100</b>		61	29
					3

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 %	60-70%	Sufficient (2)	2	30	1
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			

<b>TOTAL</b>	<b>100%</b>	<b>(Fex100)/100</b>				
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\* students who don't pass the partial exams during the semester have to attend the final exam which is 100% of the grade.

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

Evaluation elements	Description	Deadline	Compensation
Attendance of lectures and exercise	Students attendance is checked and notified. Student can miss 15% of the classes justifiably the most.	semester (60 hours of direct lectures)	-
Exercise project	Exercises are given in groups and student make exercise project individually. Each project is complex (1 project) and it is made in parts corresponding to teaching parts. Student presents the whole project at the end of semester, and each part is evaluated on lectures during the semester.	end of semester	
Partial exam 1	First partial exam can be attended by students who did not miss more than 15% of lectures and exercises.	end of semester	
Written and oral exam	Students who did not pass the subject through partial exams and exercise project (less the 61% of points), or who are not satisfied with the grade, can attend the final oral exam in given exam periods. The grade given on oral exam is final and it makes 100% of the grade.	In given exam periods	



## Woodworking machinery II

### Learning outcomes and evaluation methods

<b>Learning outcomes (LO)</b>	<b>Evaluation methods</b>	<b>Connection with the study program LO</b>
Suggest optimum tool-tip material (high speed steel, hard alloy, hard metal, or diamond) for the default workpiece material and processing parameters.	seminar, final exam	C1
Suggest optimum processing parameters (feed speed, cutting speed ...) for basic woodworking processes.	seminar, final exam	C1
Calculate the energy efficiency of a particular processing method as the ratio of average energy consumed in kWh and unit quantity of processed material.	seminar, final exam	C1
Comment the results of measured and calculated operating regimes for mechanical woodworking machines with reference to the recommended values.	seminar, final exam	C1
Measure feed per tooth, feed per revolution and cutting speed on band saw, circular saw, planer, moulder, drill, and report the measurement results as a report.	seminar, final exam	C1
Distinguish the causes of tool wear and the tool's sharpness reduction.	seminar, final exam	C1
Analyse the influential factors on tool life according to Taylor and suggest ways of increasing the tool life under the processing conditions.	seminar, final exam	C1
Derive the formula for the calculation of the cutting force, cutting power and theoretical roughness in wood cutting	seminar, final exam	C1
Calculate the cutting speed and tool life for the optimum productivity, analyse influencing parameters, and suggest the economic cutting speed	seminar, final exam	C1
Differentiate the evaluation criteria of wood machinability for different species of wood processed on band saws, circular saws, planers, mills, lathes, drills.	seminar, final exam	C1
Illustrate and measure basic parameters which make up the technical criteria for selection of woodworking machines.	seminar, final exam	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 (L)	-	-	-	30	0	1
Exercises and seminar (E)	50%	50-60%	Sufficient (2)	30	20	1
		61-75%	Good (3)			
		76-90%	Very good (4)			
		91-100%	Excellent (5)			
Final exam (FE)	50%	50-60%	Sufficient (2)	-	30	1
		61-75%	Good (3)			
		76-90%	Very good (4)			
		91-100%	Excellent (5)			
<b>UKUPNO</b>	<b>100%</b>	<b>(Ex50 + FE50)/100</b>		<b>60</b>	<b>60</b>	<b>3</b>

### Detailed description of evaluation elements for lecturer, excercises, 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 15% of direct teaching hours.	semester (60 hours of direct lecturer)	-
Exercises (E)	Exercise exercises include auditing exercises that handle numerical tasks related to individual chapters and laboratory measurements of key parameters for the optimization of the performance on a particular machine and determination of optimal parameters according to the calculation and recommendations of the tool and machine manufacturer, and methodology of noise and vibration measurements on woodworking machines. Exercises are, as appropriate, attended by groups. The accuracy, regularity and regularity are evaluated. Along with the regularity of lectures and exercises, the lecture and exercise report is delivered in the form of a seminar and is a condition for oral exam.	According to the agreed terms	Exceptionally, in the case of a justified reason for the students absence from the individual laboratory exercise.
Oral exam	The requirement for the oral part of the exam is a passing grade from the seminars and reports from laboratory exercises. Theoretical knowledge, understanding and detailed examination of the subjects studied in the lectures, is checked.	Exam terms	



## Furniture construction

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
To identify and describe furniture construction, to classify (kitchen furniture, dining room furniture, office and school etc.) and to identify furniture (whose main features are visual, aesthetic and functional elements and inner construction and functional structure) and to use technical terms (rail, panel, hinge etc)	final examination	C4, C5
To design, draw and describe furniture for storage, dining and work, sitting and lying by way of conceiving stage (analysing tasks and dealing with the issue of constructing), designing (selecting the best variant and making a drawing) and by constructional elaboration to parts and assemblies.	exercises in the computer classroom, corrections, exercise evaluation, final examination	C5
To design storage furniture, furniture for work, sitting and lying and in accordance with ergonomic and anthropometric principles and HRN EN standards.	exercises in the computer classroom, corrections and exercise evaluation	C5
To draw up the basic construction documentation and to approach systematically to its completion.	exercises in the computer classroom, corrections and exercise evaluation	C5
Define and sketch furniture for people with disabilities, outdoor furniture and paper and cardboard furniture.	final examination	C5
To use CAD systems for making technical drawings or drawings as data carriers in relation to product shape, construction and quality.	exercises in the computer classroom, corrections and exercise evaluation	C5
To deal with calculations for the construction of different furniture types (to dimension construction)	exercises in the computer classroom, corrections and exercise evaluation	C5
To manage the equipping of a facility with furniture for storage, dining, work, sitting and lying.	final examination	C5
Recognize and describe quality factors of processed types of furniture	exercises in the computer classroom, corrections, exercise evaluation, final examination	C5
Recognize and distinguish between connecting fittings and other types of furniture fittings,	exercises in the computer classroom,	C5



corrections and exercise  
 evaluation

**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)	34 %	Partly neat and partly correct, corrected twice, not submitted on time	Sufficient (2)	30	15	1,5
		Neat and partly correct, corrected twice, submitted on time	Good (3)			
		Neat, correct, complete, not submitted on time Neat with minor corrections, complete and submitted on time	Very good (4)			
		Neat, correct, complete, submitted on time	Excellent (5)			
Written exam (WE)	34 %	60-70%	Sufficient (2)	0	3	0,10
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
Oral exam (OE)	33 %	60-69%	Sufficient (2)	0	12	0,40
		70-79%	Good (3)			
		80-89%	Very good (4)			
		90-100%	Excellent (5)			
<b>TOTAL</b>	<b>100 %</b>	<b>(E×34 + WE×33 + OE×33) / 100</b>		60	30	3

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

Evaluation elements	Description	Deadline	Compensation
Lectures (L)	Student' attendance is checked and recorded. Student may be absent from no more than 20% of lectures.	according to syllabus	-
Exercises (E)	Student' attendance is checked and recorded. Student may be absent from no more than 10% of exercises.	according to syllabus	-



	Exercises are checked and graded. The grade for exercises is the arithmetic mean of grades for individual exercise grades. The requirements for taking the written examination are positively graded exercises.		
Written exam (WE)	Students whose exercises have been graded and who regularly attended classes may take the examination. Students randomly choose an assignment with the product photograph or given parameters for drawing and designing. Orthogonal projections and characteristic sections are drawn freehandedly, and the component and technical description are filled on forms prepared beforehand. The written examination is graded and included in the final grade .	Exam terms	-
Oral exam (OE)	A requirement for taking the oral examination is to acquire sufficient scores in the written part of the examination. Students' theoretical knowledge and understanding of constructional compositions are examined. The final grade will be calculated by the formula : $(E \times 30 + WE \times 35 + OE \times 35) / 100$	Exam terms	-

## Upholstered Furniture

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
To identify historic periods, styles and development of upholstered furniture	final examination	A1
To design and construct types of upholstered furniture intended for sitting, lying and for multiple purposes (resting and relaxation)	exercises in the computer classroom, corrections, exercise evaluation	C5
To distinguish and recommend materials for making upholstered furniture (such as for making the frame construction, for the elastic layer, for decorative-covering layer...)	final examination	C5
To choose materials for the frame construction; for the base of furniture for sitting and lying; for the elastic layer i.e. the core; for surface softness and for the decorative covering layer:	exercises in the computer classroom, corrections, exercise evaluation, final examination	B3, C5
To design furniture and plan its manufacture depending on available technology (classical (hand), machine made, construction technology of mattress...)	final examination	C5
To draw a contemporary construction of upholstered furniture for sitting and lying	exercises in the computer classroom, corrections, exercise evaluation, final examination	C5
To define and apply functional requirements for upholstered furniture	final examination	C5
To plan, recommend and assess upholstered furniture quality	final examination	D1





To differ stages of the technological process of upholstered furniture manufacturing (eg. when producing mattresses, to recognise the process of making the mattress core, making outer layers etc.)	final examination	C5
To recognise the types (quality) of sponge materials (eg. the difference between viscoelastic foam and latex, differences in density (hardness) of polyurethane sponges, etc.) and the flammability resistance of upholstered furniture.	final examination	C5

### 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)	50 %	Partly neat and partly correct, corrected twice, not submitted on time	Sufficient (2)	30	15	1,5
		Neat and partly correct, corrected twice, submitted on time	Good (3)			
		Neat, correct, complete, not submitted on time	Very good (4)			
		Neat with minor corrections, complete and submitted on time				
		Neat, correct, complete, submitted on time	Excellent (5)			
Oral exam (OE)	50 %	60-70%	Sufficient (2)	0	15	0,5
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100 %</b>	<b>(E×50 + OE×50) / 100</b>		<b>60</b>	<b>30</b>	<b>3</b>

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

Evaluation elements	Description	Deadline	Compensation
Lectures (L)	Student' attendance is checked and recorded. Student may be absent from no more than 20% of lectures.	according to syllabus	-
Exercises (E)	Student' attendance is checked and recorded. Student may be absent from no more than 10% of exercises. Exercises are checked and graded. The grade for exercises is the arithmetic mean of grades for individual exercise grades.	according to syllabus	-



	Seminar and exercises are checked and graded. The grade for the practical part (seminar and exercises) is the arithmetic mean of the seminar and individual exercise grades. The requirements for taking the examination are positively graded exercises and the seminar.		
Oral examination (OE)	Students whose exercises and seminar have been graded and who regularly attended classes may take the examination. Students' theoretical knowledge and understanding of certain construction compositions will be examined. The final grade will be calculated by the formula: $(E \times 50 + OE \times 50) / 100$	Exam terms	-

## Furniture design

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods	Connection with the study program LO
Recognize and apply the characteristics of historical styles and heritage in furniture design	exercises (project assignment, seminar work)	C4, C8 E1
Compare and monitor contemporary trends and innovations in furniture design (internet, magazines, books) in the context of economic development, culture, heritage and social, developmental and historical factors of each nation and apply them in designing new furniture design solutions	exercises (project assignment, seminar work)	A1 E1
Explain the importance of an interdisciplinary approach and the inclusion of knowledge of other professions in furniture design	exercises (project assignment), final exam	A1 E1
Recognize and explain the term good design using the parameters of good design	exercises (project assignment, seminar work), final exam	B3 C4, C5, C8 E1
Design and shape furniture and other wooden products using design elements (means of expression) and the principles of modern design (functional, aesthetic, technical-technological, human, economic, environmental principles, etc.) or according to given characteristics (input data)	exercises (project assignment, seminar work), final exam	B3, B4 C4, C5, C8 E1
Use innovations and new materials and technologies in designing conceptual furniture solutions on a given topic	exercises (project assignment, seminar work), final exam	B3 C4, C5, C8 E1
Apply knowledge of aesthetics, ergonomics, anthropometry, ecology, standards, new materials, and technologies, marketing and visual identity in the design of furniture and other wood products	exercises (project assignment, seminar work), final exam	A1 D2



Define design-functional, construction-technological and other characteristics of the executive design of furniture	exercises (project assignment, seminar work), final exam	B3, B4 C4, C5, C8 E1
Apply knowledge of design drawing (spatial and / or, computer) and workshop work (professional practice) in the development of conceptual and implementation solutions for designed furniture	exercises (project assignment, seminar work)	A1, A4
Present the solution of designed furniture in all stages of product development with the final model/prototype in the design of furniture and other wood products	exercises (project assignment, seminar work)	B3, B4 C4, C5, C8 E1

### 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)	0			30	0	1
Exercises (E)	90%	Partial understanding of the adopted subject, poor student activity and the quality of the project task solution.	Sufficient (2)	30	25	1,8
		Partial understanding of the adopted subject, good student activity and quality of the project task solution.	Good (3)			
		Very well applied and adopted material, very good student activity and quality of the project task solution.	Very good (4)			
		Exceptional engagement, excellent applied and adopted material, excellent student activity and the quality of the project task solution.	Excellent (5)			
Oral exam (OE)	10%	60-70%	Sufficient (2)	0	5	0,2
		71-80%	Good (3)			
		81-90%	Very good (4)			
		91-100%	Excellent (5)			
<b>TOTAL</b>	<b>100%</b>	<b>(E×90 + OE×10) / 100</b>		60	30	3



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

Evaluation elements	Description	Deadline	Compensation
Lectures	The attendance is checked, and the presence of students is recorded. The student can justifiably be absent with a maximum of 20% of the tuition.	according to syllabus	
Excercises	The excercises are checked and recorded by the presence of students. The student can justifiably absent with a maximum of 10% of the exercise. During the semester, the student prepares excercises / tasks in team and individual work, monitoring continuous student progress and adopting thematic knowledge and skills, in accordance with the evaluation criteria. The right to sign is obtained by the number of attendance classes and excercises as well as assignments and seminars within the given deadline. It is obligatory to submit each phase of the project task to insight. Submission of the project task is by deadline, by the end of the semester.	according the syllabus	
Oral exam	Requirements for the oral part of the exams are devoted and positively evaluated excercises project assignment, all other assignments and seminar papers. The oral exam consists of verbal defence (presentation) of the project task solution and the understanding of all phases of designing the conceptual and execution solution in the project assignment as well as the understanding and adoption of knowledge in lectures and excercises. The final grade is obtained according to the formula: $(V \times 90 + UI \times 10) / 100$	exam terms	

## Bachelor thesis

### Learning outcomes and evaluation methods

Learning outcomes (LO)	Evaluation methods
be able to apply existing knowledge to solve professional problems for the selected topic	Undergraduate thesis
create a term work plan following the set deadlines for the preparation of the bachelor thesis by components	Undergraduate thesis
devise a methodology for writing a professional or review paper	Undergraduate thesis
apply the methodology of writing a professional or review paper	Undergraduate thesis
present bachelor thesis in written and oral form	Undergraduate thesis defence of undergraduate thesis



### 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
Undergraduate thesis (UT)	70%	See description	Sufficient (2)		150	5
			Good (3)			
			Very good (4)			
			Excellent (5)			
Defence of undergraduate thesis (UD)	30%	See description	Sufficient (2)		60	3
			Good (3)			
			Very good (4)			
			Excellent (5)			
<b>TOTAL</b>	<b>100%</b>				<b>210</b>	<b>8</b>

Evaluation elements	Description	Deadline	Compensation
Undergraduate thesis (UT)	<p>sufficient (2) - There are substantial deficiencies in the work, the basic concepts are superficial and no deeper knowledge of the subject</p> <p>good (3) - Only some of the relevant aspects of the topic are presented in this paper, the literature is processed correctly but only partially. The scientific and professional vocabulary is basic</p> <p>very good (4) - The work is well-structured with facts, relevant theories and up-to-date data are presented, the literature is correctly elaborated, but the approach lacks creativity.</p> <p>excellent (5) - The work is logically well structured factually correct and conceptually well-defined, the entities are related, the relevant and recent literature is used and the approach to the topic from different perspectives is visible.</p>		-
Defence of undergraduate thesis (UD)	<p>sufficient (2) - The presentation is a retelling of the read text, the answers to the questions are scarce.</p> <p>good (3) - The presentation is clear and informative, but without the ability to link theory to practice. Ability to answer only simple questions.</p> <p>very good (4) - The presentation is clear and substantive, the answers to the questions are just correct and do not indicate a deeper reflection on the topic.</p> <p>excellent (5) - The presentation is clear, highly informative, answers the questions right and creative.</p>		