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UČNI NAČRT MIKRODOKAZILA/MICRO-CREDENTIAL SYLLABUS

Naziv mikrodokazila: *Micro-credential title:*	Razvrščanje lesa po trdnosti Strength Grading of Timber
Študijsko področje po KLASIUS P-16 *Study field according to KLASIUS P-16:*	072
Razvrstitev v SOK: *SQF Classification in*	7
Razvrstitev v EOVK: *QF-EHEA Classification*	1 stopnja
Razvrstitev v EOK: *EQF Classification*	6
Univerzitetna koda/*University code:*	
Način izvedbe (klasično, hibridno, na daljavo) *Method of implementation (classic, hybrid, online)*	klasično classic

Predavanja *Lectures*	**Seminar** *Seminar*	**Vaje** *Tutorial*	**Klinične vaje** *Clinical work*	**Druge oblike študija** *Other forms of study*	**Samostojno delo** *Individual work*	**ECTS**
6		6			18	1

Nosilec predmeta/*Lecturer*: **(So)izvajalci**/(*Co)-Lecturers:*	Assist. Prof. Dr. Mohammad Derikvand
Jezik izvedbe *Language of instruction*	Angleščina English
Maksimalno število udeležencev *Maximum number of participants:*	15

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Merila za izbor udeležencev v primeru večjega interesa od razpisanih mest:	*Criteria for selecting participants in the event of greater interest than the number of places available:*
Datum prijave	Date of application

Pogoji za vključitev:	*Prerequisites:*
Delavci in študenti v gradbenem ekosistemu Osnovno znanje o fizikalnih in mehanskih lastnostih lesa.	Construction ecosystem workers and students Basic knowledge of wood physical and mechanica properties.

Vsebina:	*Content (Syllabus outline):*
Teme predavanj: - Uvod v razvrščanje lesa po trdnosti, - Dejavniki, ki vplivajo na mehanske lastnosti in razred lesa, - Standardi in predpisi za razvrščanje lesa po trdnosti, - Metoda vizualnega razvrščanja, - Metoda strojnega razvrščanja, - Nadzor kakovosti pri razvrščanju lesa po trdnosti, - Novi inovativni pristopi. Laboratorijske vaje: - Vaja razvrščanja lesa po trdnosti, - Uporaba standardov za razvrščanje lesa (kot del študijskih obveznosti), - Mehansko testiranje lesa, ki so ga razvrstili udeleženci (kot del študijskih obveznosti).	Lecture topics: - Introduction to strength grading of timber, - Factors influencing mechanical properties and grade of timber, - Strength grading standards and regulations, - Visual grading method, - Machine grading method, - Quality control in timber strength grading, - Emerging innovations. Laboratory work: - Exercise on timber strength grading, - Implementing standards to grade timber (as part of a coursework), - Mechanical testing of timber graded by participants (as part of a coursework).

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Individualno delo: - Priprava poročila o študijskih obveznostih in povezanih nalogah.	Individual work: - Preparation of a report on the coursework and related tasks.

Literatura in viri/*Readings:*

1. Ridley-Ellis, D., Stapel, P., & Baño, V. (2016). Strength grading of sawn timber in Europe: an explanation for engineers and researchers. European journal of wood and wood products, 74, 291-306.
2. EN 14081-1 (2006). Timber structures - Strength graded structural timber with rectangular cross section - Part 1: General requirements. CEN European Committee for Standardization.
3. Lecture notes to be provided to the participants.

Druge pomembne sestavine (npr. licence, orodja, pripomočki ipd.):	*Other important components (e.g. licenses, tools, utilities, etc.):*
/	/

Cilji in kompetence:	*Objectives and competences:*
Izkaže celovito razumevanje metod razvrščanja lesa po trdnosti. Izkaže celovito razumevanje dejavnikov, ki vplivajo na razred trdnosti lesa. Izkaže sposobnost ocenjevanja razreda trdnosti lesa na podlagi standardnih zahtev. Izkaže sposobnost izvajanja ustreznih ukrepov nadzora kakovosti za zagotavljanje zanesljivih rezultatov razvrščanja lesa.	Demonstrate a comprehensive understanding of strength grading methods of timber. Demonstrate a comprehensive understanding of factors affecting the strength grade of timber. Demonstrate the ability to asses strength grade of timber based on standard requirements. Demonstrate the ability to implement relevant quality control measures to ensure reliable timber grading outcomes.

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Predvideni učni izidi:	*Intended learning outcomes:*
Znanje in razumevanje: Poznavanje trdnosti lesa. Sposobnost za analizo, sintezo in predvidevanje rešitev ter njihovih posledic konkretnih problemov z uporabo znanstvenih metod. Uporaba in refleksija: Spoznavanje in razumevanje metod razvrščanja lesa po trdnosti, uglašenosti med teorijo in njeno aplikacijo na konkretnih primerih. Avtonomnost, (samo)kritičnost, (samo)refleksivnost. Prenos naučenih principov na načrtovanje obsežnih realnih sistemov. Sposobnost pridobivanja, slekcije in ocenjevanje novih informacij in zmnožnost ustrezne interpretacije v kontekstu. Sposobnost za upravljanje s časom, za samo pripravo in načrtovanje ter samokontrolo izvajanja postopkov. Sposobnost timskega dela.	*Knowledge and understanding:* Expertise in strength grade of timber. The ability for analysis, synthesis and anticipation of solutions and their consequences for target problems using the scientific methodology. *Use and reflection:* Understanding and recognizing the importance of a comprehensive understanding of strength grading methods of timber, the harmony between theory and its application to concrete examples. Autonomy, (self)criticism, (self-reflection. Transfer of learned principles to the design of large-scale real systems. Ability to acquire, select, and evaluate new information and the capacity for appropriate interpretation in context. Ability to manage time, self-preparation and planning, and self-monitoring of process execution. The ability to work in a team.

Metode učenja in poučevanja	*Learning and teaching methods:*
Oblike dela: • predavanja • vaje • samostojno delo Metode dela: razlaga, dialog, diskusija, problemsko učenje, študije primerov	Forms of teaching: • lectures • exercises • individual work Teaching methods: explanation, debates, discussion, problem-based learning, case studies

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Način preverjanja in ocenjevanja: *Type of examination and assessment:*

Način (pisni izpit, ustni izpit, naloge, idr.)	Delež (v %): *Weight (in %)*	*Type (written exam, oral exam, assignments, etc.)*
Projektna naloga	100%	Project assignment

Pogoji za pridobitev mikrodokazila: *Minimal standards for obtaining micro-credential:*

Udeleženec mora obiskovati usposabljanje in oddati ustrezno projektno nalogo.	The participant must attend the training and submit the relevant project assignment.

Reference nosilca/*Lecturer's references:*

Vodenje projekta:
HORIZON-WIDERA-2023-TALENTS-02 Ponoven življenjski cikel odsluženega lesa z izdelavo lesenih mozničnih sten (EcoDLT), 1.9.2024 - 31.8.2026.

Izvirni znanstveni članki:

1. DALVAND, Mosayeb, DERIKVAND, Mohammad, MALEKI, Sadegh, BAHMANI, Zahra. Bending moment capacity of double mortise and tenon joints under diagonal tension and compression. Wood Material Science & Engineering. 2025, vol. 20, no. 3, str. 737-740
2. HAN, Lei, DERIKVAND, Mohammad, SANDAK, Jakub Michal, HLADNIK, Martin, SANDBERG, Dick, KUTNAR, Andreja. Push-out resistance of threaded wooden dowels in cross-laminated timber with hardwood cross-layer. Wood Material Science & Engineering. 2025, str. 1-7
3. DERIKVAND, Mohammad, FINK, Gerhard. Bending properties of deconstructable cross-laminated timber-concrete composite floor elements. Wood Material Science & Engineering. 2022, vol. 17, iss. 4, str. 253-260
4. DERIKVAND, Mohammad, HOSSEINZADEH, Serveh, FINK, Gerhard. Mechanical properties of dowel laminated timber beams with connectors made of salvaged wooden materials. Journal of architectural engineering. Print ed. 2021, vol. 27, iss. 4, str. 1-9