Course Module

Characteristics of Wood as Construction Material

Faculty of Forestry

Mulawarman University

Module name	Characteristics of Wood as Construction Material
Modul level, if applicable	Doctoral
Code, if applicable	190401903P017
Subtitle, if applicable	
Courses, if applicable	Regular
Semester(s) in which the module is taught	The course is available in all active teaching semesters
Person responsible for the module	Prof. Dr. Ir. Agus Sulistyo Budi
Lecturer	Prof. Dr. Ir. Agus Sulistyo Budi Dr. Ir. Isna Yuniar Wardhani, M.P.
Language	Indonesia, English
Relation to curriculum	
Type of teaching, contact hours	
Workload	Number of meetings per semester 16 meetings (14 meetings for learning activity, 1 meeting for mid-semester, 1 meeting for final examination) For this course, students are required to meet a minimum of 119 hours per semester, which consist of : - 35 hours for lecture - 42 hours for structured assignments - 42 hours for individual study
Credit points	3 SKS / 4.8 ECTS Details: 1 Credit = 170 min / week

	1 Credit = 170 min x 14 week = 2380 min / semester 1 Credit = 39.7 h / semester 1 ECTS = 25 h/ Semester 1 Credit = 1.59 » 1.6 3 Credit = 1.6 x 3 = 4.8 ECTS
Requirements according to the examination regulations	
Recommended prerequisites	
Module objectives/intended learning outcomes	**Intended Learning Outcome (ILO)** **Attitude** 1. **CPL1/ILO1 (S1)** - Internalize values, norms, and ethics **Knowledge** 2. **CPL2/ILO2 (P1)** - Synthesize knowledge acquired from research findings with novelty and its implementation 3. **CPL3/ILO3 (P2)** - Discover and develop scientific conceptions with novelty value, and develop scientific arguments as scientific solutions **Specialized Skills** 4. **CPL6/ILO6 (GS3)** - Manage data and information to support decision-making processes **Course Learning Outcome (CLO)** 1. **CLO 1 :** Students are able to correlate the properties of wood with the requirements for wooden construction materials. 2. **CLO 2 :** Students are able to develop engineered materials based on the properties of wood. 3. **CLO 3:** Students are able to manage data on wood to develop engineered wood products as construction materials.
Content	This course provides students with a comprehensive understanding of wood structure, properties, and applications in construction. Students will explore wood formation at the molecular level, analyze its strength and essential characteristics as a construction material, and assess the differences in reaction wood properties. The course covers wood treatments, engineered wood products, and their suitability for structural applications, as well as the compatibility of joints and fastening tools with various wood types. The complete topic of each meeting is mentioned below: 1. Students are able to analyze the formation of wood structure in trees 1st–2nd sessions) → **CLO1**. 2. Students are able to correlate the molecular structure of wood with its strength properties (3rd–4th sessions) → **CLO1**. 3. Students are able to analyze the essential properties of wood as a construction material (5th–6th sessions) → **CLO1** 4. Students are able to analyze the properties of reaction wood (7th–8th sessions) → **CLO1.**

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<tr><td></td><td>5. Students are able to analyze wood treatments for construction purposes (9th session) → CLO2.
6. Students are able to analyze the properties of engineered wood for structural materials (10th session) → CLO2.
7. Students are able to relate the types of wood to various kinds of constructions (11th–13th sessions) → CLO1.
8. Students are able to synthesize the compatibility of joints and fastening tools with different types of wood (14th–16th sessions) → CLO3 .</td></tr>
<tr><td>Study and examination requirements and forms of examination</td><td>Evaluation and assessment of learning achievement based on:
<table>
<tr><th>No.</th><th>Objects of Assessment</th><th>Forms of Assessment</th><th>Quantity (%)</th></tr>
<tr><td>1</td><td>Affective</td><td>Participation</td><td>10</td></tr>
<tr><td>2</td><td>Practicum</td><td>Participation, Group Project Report</td><td>20</td></tr>
<tr><td>3</td><td>Assignment/Case Study</td><td>Group Presentation</td><td>15</td></tr>
<tr><td>4</td><td>Project</td><td>Report</td><td>15</td></tr>
<tr><td>5</td><td>Mid-semester test</td><td>Written test</td><td>15</td></tr>
<tr><td>6</td><td>Final semester test</td><td>Written test</td><td>25</td></tr>
<tr><td colspan="3">TOTAL</td><td>100</td></tr>
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<tr><td>Media employed</td><td>Class, Ms. Powerpoint, Ms. Word, Computer, LCD, STAR</td></tr>
<tr><td>Reading list</td><td>1. Shmulsky, R and P.D. Jones. 2019. Forest Products and Wood Science An Introduction. Seventh edition. John Wiley & Sons Ltd. UK
2. Schweingruber, F.H. 2007. Wood Structure and Environment. Springer-Verlag Berlin Heidelberg.
3. Kollmann, F.F.P and W.A. Cote. 1984. Principles and Wood Science Technology: I. Solid Wood. Springer –Verlag. New York
4. Wood handbook—Wood as an engineering material. 2010. Madison, U.S. Department of Agriculture, Forest Service, Forest Products Laboratory
5. Zwerger, K. 2011. Wood and Wood Joints . Birkhäuser GmbH, Basel, Switzerland
6. Handbook 1: Timber Structures. 2008. Leonardo da Vinci Pilot Project
7. Kollmann, F.F.P., E.W. Kuenzi and A.J. Stamm. 1975. Principles and Wood Science Technology: II. Wood Based Materials. Springer –Verlag. Berlin – Heidelberg.</td></tr>
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	8. BSN, 2013. SNI 7973, Spesifikasi desain konstruksi kayu. 9. Various other related scientific articles on the Characteristics of Wood as Construction Material