

## COURSE DESCRIPTION – ACADEMIC YEAR 2024/2025

<b>Course title</b>	<b>Laboratorio di Cantiere 4.0</b>
<b>Course code</b>	42636
<b>Scientific sector</b>	ING-IND/16
<b>Degree</b>	Professional Bachelor in Wood Technology (L-P03)
<b>Semester</b>	1
<b>Year</b>	2
<b>Credits</b>	3
<b>Modular</b>	No
<b>Total lecturing hours</b>	-
<b>Total lab hours</b>	30
<b>Attendance</b>	Strongly recommended
<b>Prerequisites</b>	-
<b>Course page</b>	Microsoft Teams and <a href="https://ole.unibz.it/">https://ole.unibz.it/</a>
<b>Specific educational objectives</b>	<p>The course is characterizing and integrative part of the specialization in wood construction. It deals with the topic of digital transformation of processes in constructions with specific reference to the timber industry.</p> <p>The course aims at providing an adequate mastery of methods and specific professional knowledges about the management of digital processes along the value chain of the timber industry, with specific reference to the phases before production (design and engineering) and after production (assembly on site, facility management and disassembling).</p> <p>Students will learn methods and strategies for the management and the control of horizontal and vertical digital processes along the value chain of the timber industry.</p>
<b>Lecturer</b>	Gabriele Pasetti Monizza
<b>Contact</b>	<a href="mailto:gabriele.pasettimonizza@unibz.it">gabriele.pasettimonizza@unibz.it</a>
<b>Scientific sector of lecturer</b>	ING-IND/16, ICAR/12
<b>Teaching language</b>	Italian
<b>Office hours</b>	Wednesday 17:30- 19:30, scheduled beforehand by email.
<b>Lecturing Assistant (if any)</b>	-
<b>Contact LA</b>	-
<b>Office hours LA</b>	-
<b>List of topics</b>	<p>The laboratory activities will cover the following specific topics:</p> <ul style="list-style-type: none"> <li>• Development of a mock-up project according to a use-case of a small Cross Laminated Timber (CLT) house provided by the lecturer.</li> <li>• Development of a digital automation strategy before the production stage of the building elements through Computational Design and Digital Fabrication techniques.</li> <li>• Production of the building elements (scale 1:50) through CNC machinery, evaluating and mapping the whole value</li> </ul>

	<p>chain system through Value Stream Mapping (VSM) technique.</p> <ul style="list-style-type: none"> <li>• Planning and management of on-site assembly according to Lean Construction principles.</li> </ul>
<p><b>Teaching format</b></p>	<p>The lecturer is present in the laboratory, assisting and supervising the development of the activities.</p> <p>The laboratory activities aim at applying specific professional knowledge acquired during the lecturing activities of the course "42635 Cantiere 4.0".</p>
<p><b>Learning outcomes</b></p>	<p>Knowledge and understanding:</p> <ul style="list-style-type: none"> <li>• Knowledge and understanding of the fundamental methodologies for the management of digital processes in the timber industry.</li> </ul> <p>Applying knowledge and understanding:</p> <ul style="list-style-type: none"> <li>• Ability to transfer into professional activities the methodologies for the management of digital processes in order to ensure higher efficiency and effectiveness of the systems along the entire value chain system of a product in the timber industry.</li> </ul> <p>Making judgments</p> <ul style="list-style-type: none"> <li>• Ability to implement innovative technologies in a sustainable way according to business needs through listening and problem-solving skills.</li> </ul> <p>Communication skills</p> <ul style="list-style-type: none"> <li>• Ability to present and analyse problems, offering solutions in a clear and comprehensive way even during teamwork.</li> </ul> <p>Learning skills</p> <ul style="list-style-type: none"> <li>• Ability to face a continuous training on specific technologies for the management of digital processes in the timber industry, being able to implement new emerging and innovative technologies.</li> </ul>
<p><b>Assessment</b></p>	<p>The laboratory activities are assessed only through a "passed/not passed" criteria.</p> <p>Non-attending students must develop autonomously the laboratory activities, attending a final presentation of the outcomes with the lecturer during the office hours.</p>
<p><b>Assessment language</b></p>	<p>Italian</p>
<p><b>Assessment Typology</b></p>	<p>Monocratic</p>
<p><b>Evaluation criteria and criteria for awarding marks</b></p>	<p>Criteria for the evaluation of the outcomes from laboratory activities both for attending and non-attending students:</p> <ul style="list-style-type: none"> <li>• Correctness in the execution of the various phases of the activities and consistency with the contents of the course "42635 Cantiere 4.0".</li> </ul>

<p><b>Required readings</b></p>	<ul style="list-style-type: none"> <li>• Cristina Benedetti, Vincenzo Bacigalupi; <i>Legno architettura: il futuro della tradizione</i>, ISBN: 88-7890-039-7</li> <li>• Maurizio Piazza, Roberto Tomasi, Roberto Modena; <i>Strutture in legno: materiale, calcolo e progetto secondo le nuove normative europee</i>, ISBN: 978-88-203-3583-0</li> <li>• Klaus Erlach; <i>Value Stream Design</i>, ISBN 978-3-642-12568-3</li> <li>• Rafael Sacks, Chuck Eastman, Ghang Lee, Paul</li> <li>• Teicholz; <i>BIM Handbook: A Guide to Building Information Modeling for Owners, Designers, Engineers, Contractors, and Facility Managers</i>, ISBN: 978-1-119-28753-7</li> <li>• Arturo Tedeschi; <i>Architettura Parametrica</i>, ISBN: 978-88-95315-08-9 97</li> </ul> <p>Subject Librarian: David Gebhardi, <a href="mailto:David.Gebhardi@unibz.it">David.Gebhardi@unibz.it</a> and Ilaria Miceli, <a href="mailto:Ilaria.Miceli@unibz.it">Ilaria.Miceli@unibz.it</a></p>
<p><b>Supplementary readings</b></p>	<ul style="list-style-type: none"> <li>• Cristina Benedetti [et al.]; <i>Costruire in legno: edifici a basso consumo energetico</i>, ISBN : 978-88-6046-019-6</li> <li>• Umberto Barbisan, Franco Laner; <i>Capriate e tetti in legno : progetto e recupero</i>, ISBN : 88-464-2274-0</li> <li>• Brad Hardin, Dave McCool; <i>BIM and Construction Management: Proven Tools, Methods, and Workflows</i>, ISBN: 978-1-118-94276-5</li> <li>• Achim Menges, Sean Ahlquist; <i>Computational Design Thinking: Computation Design Thinking</i>, ISBN: 978-0-470-66570-1</li> </ul>
<p><b>Software used</b></p>	<ul style="list-style-type: none"> <li>• Microsoft - PowerPoint</li> <li>• Robert McNeel &amp; Associates - Rhinoceros v7 or earlier</li> </ul>