

Syllabus

Course description

Course title	Energy Efficiency in Wood Production and Final use
Course code	42310
Scientific sector	ING/IND 10
Degree	Bachelor in Wood Engineering
Semester	II
Year	II
Academic Year	2019/20
Credits	6
Modular	no

Total lecturing hours	36
Total lab hours	
Total exercise hours	24
Attendance	Strongly recommended
Prerequisites	
Course page	https://www.unibz.it/it/faculties/sciencetechnology/bachelor-wood-engineering

Specific educational objectives	<p>The present course deals with the fundamental concept of energy efficiency with a special focus on the wood engineering sector.</p> <p>The course consists of 44 hours of frontal lectures and 16 hours of exercises. In addition, two study visits outside UNIBZ are foreseen.</p> <p>At first, a general overview on energy resources, vectors and global demand, sustainability and circular economy is presented. Then, the theory behind the concept of efficiency is discussed. Particularly, thermodynamics principles are considered.</p> <p>After the first theoretical part of the course, students will be involved in more applicative activities. Analysis and evaluation of efficiency, energy audit, projects and management systems will be carried out through both lectures and exercises.</p>
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Lecturer	Vittoria BENEDETTI vittoria.benedetti@unibz.it , 0471 017706 Daniele BASSO daniele.basso@unibz.it , 0471 017745
Scientific sector of the lecturer	ING-IND/10
Teaching language	English
Office hours	By appointment

Teaching assistant (if any)	
Office hours	
List of topics covered	<p>The course will cover the following topics:</p> <ul style="list-style-type: none"> • Sustainability and circular economy concepts • Energy resources, vectors and global demand. • Thermodynamics principles • Efficiency analysis and evaluation, with a special focus on the wood industry • Energy audit • Energy efficiency projects • Energy management systems (ISO 50001) • Applied economy principles • Sustainability report
Teaching format	<p>The course consists of lectures in which the topics are presented by the professor. Both theoretical topics and applicative examples (exercises) will be presented. Topics will be presented at the blackboard and using electronic slides. Teaching material and additional materials will be provided by the Professors during the semester.</p>

Learning outcomes (ILOs)	<p>The learning outcomes need to refer to the Dublin Descriptors:</p> <p><u>Knowledge and understanding</u></p> <ol style="list-style-type: none"> 1. Knowledge and understanding of the fundamentals of energy efficiency and sustainability, especially in the wood industry. <p><u>Applying knowledge and understanding</u></p> <ol style="list-style-type: none"> 2. Applying knowledge and understanding to the solution of problems in the field of energy efficiency and, in particular, to efficiency improvement projects. <p><u>Making judgements</u></p> <ol style="list-style-type: none"> 3. Ability to make autonomous judgements in the assessment of suitable energy scenarios and ability to understand and propose improvement projects, to be applied to the wood industry. <p><u>Communication skills</u></p> <ol style="list-style-type: none"> 4. Communication skills to correctly and properly present the concepts acquired in the course and to solve simple numerical applications regarding energy systems in the wood industry. Ability to communicate issues related to energy efficiency and management.
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	<p><u>Ability to learn</u></p> <p>5. Ability to learn skills and acquire tools in the field of energy, sustainability, circular economy to be applied not only in the wood sector, but also in other industrial sectors.</p>
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Assessment	<p>Formative assessment</p> <table border="1" style="width: 100%;"> <thead> <tr> <th>Form</th> <th>Length /duration</th> <th>ILOs assessed</th> </tr> </thead> <tbody> <tr> <td>In class exercises and discussion</td> <td>16 hours</td> <td>1, 2, 3, 4, 5</td> </tr> <tr> <td>Project work</td> <td>< 4 hours</td> <td>1, 2, 3, 5</td> </tr> </tbody> </table> <p>Summative assessment</p> <p>Examination of the course is carried out by means of an oral exam. The oral examination includes questions to assess the knowledge and understanding of the course topics and questions designed to assess the ability to transfer these skills to case studies and practical applications.</p> <p>Questions on practical applications also assess the ability of the student to apply the knowledge and understanding of the course topics, the ability to make judgments and finally, the student communication skills.</p> <table border="1" style="width: 100%;"> <thead> <tr> <th>Form</th> <th>%</th> <th>Length /duration</th> <th>ILOs assessed</th> </tr> </thead> <tbody> <tr> <td>Oral exam</td> <td>100</td> <td>30 minutes</td> <td>1,2,3,4,5</td> </tr> </tbody> </table>	Form	Length /duration	ILOs assessed	In class exercises and discussion	16 hours	1, 2, 3, 4, 5	Project work	< 4 hours	1, 2, 3, 5	Form	%	Length /duration	ILOs assessed	Oral exam	100	30 minutes	1,2,3,4,5
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Assessment language	English																	
Evaluation criteria and criteria for awarding marks	<p>It is relevant for the oral exam to: master the specific language (also with respect to the teaching language); prove the understanding of the topics and learning skills; evaluate and establish relationships between topics; grow specific skills in critical thinking.</p> <p>Regarding the practical applications, it is relevant to clearly describe suitable technical solutions and be able to make critical judgments and apply the theoretical concepts.</p>																	

Required readings	Learning material will be provided by the Professors during lectures.
Supplementary readings	