Syllabus

Kursbeschreibung

Titel der Lehrveranstaltung	Energieeffizienz bei der Herstellung und Verarbeitung von Holz
Code der Lehrveranstaltung	42626
Zusätzlicher Titel der Lehrveranstaltung	
Wissenschaftlich-disziplinärer Bereich	IIND-07/A
Sprache	Englisch
Studiengang	Berufsbildender Bachelor in Holztechnik
Andere Studiengänge (gem. Lehrveranstaltung)	
Dozenten/Dozentinnen	Dott. Maja Danovska, Maja.Danovska@unibz.it Prof. Francesco Patuzzi, Francesco.Patuzzi@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/30127
Wissensch. Mitarbeiter/Mitarbeiterin	
Semester	Erstes Semester
Studienjahr/e	3
KP	4
Vorlesungsstunden	40
Laboratoriumsstunden	0
Stunden für individuelles Studium	60
Vorgesehene Sprechzeiten	12
Inhaltsangabe	• Energy resources, vectors and global demand. • Thermodynamics principles. • Energy management systems (ISO 50001). • Sustainability and circular economy concepts.

	• Energy efficiency analysis and evaluation of processes from forests to wood industry. • Energy efficiency analysis and evaluation in wood industry. • Energy efficiency analysis and evaluation of wood residues valorisation and final use.
Themen der Lehrveranstaltung	The course will cover the following topics: • Energy resources, vectors and global demand. • Thermodynamics principles. • Energy management systems (ISO 50001). • Sustainability and circular economy concepts. • Energy efficiency analysis and evaluation of processes from forests to wood industry. • Energy efficiency analysis and evaluation in wood industry. • Energy efficiency analysis and evaluation of wood residues valorisation and final use.
Stichwörter	Wood, energy efficiency, thermochemical conversion processes, circular economy, sustainability.
Empfohlene Voraussetzungen	None.
Propädeutische Lehrveranstaltungen	
Unterrichtsform	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 during the semester.
Anwesenheitspflicht	Strongly recommended.
Spezifische Bildungsziele und erwartete Lernergebnisse	The present course deals with the fundamental concept of energy efficiency with a special focus on the wood engineering sector. The course consists of 40 hours of frontal lectures dealing with the more theoretical aspects regarding energy efficiency. A general overview on energy resources, vectors and global demand, sustainability and circular economy is presented. In addition, the theory behind the concept of efficiency is discussed. Particularly, thermodynamics principles are considered. Concepts regarding energy efficiency within the wood engineering sector are

	discussed and case studies are analyzed, thereby complementing theoretical knowledge with practical applications. The learning outcomes need to refer to the Dublin Descriptors: Knowledge and understanding 1. Knowledge and understanding of the fundamentals of energy efficiency and sustainability, especially in the wood industry. Applying knowledge and understanding 2. Applying knowledge and understanding to the solution of problems in the field of energy efficiency and, in particular, to efficiency improvements in real study cases. Making judgements 3. Ability to make autonomous judgements in the assessment of suitable energy scenarios and ability to understand and propose improvement solutions, to be applied to the wood industry. Communication skills 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. Ability to learn 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.
Spezifisches Bildungsziel und erwartete Lernergebnisse (zusätzliche Informationen)	
Art der Prüfung	Examination of the course is carried out by means of an oral exam

	which will cover the theoretical part. 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. Oral exam: 100%; length/duration: 30 minutes; ILOs assessed: 1,2,3,4,5.
Bewertungskriterien	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. 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.
Pflichtliteratur	Çengel, Y. A., & Boles, M. A. (2021). Thermodynamics: An engineering approach (9th ed.). McGraw-Hill Education. Çengel, Y. A., & Ghajar, A. J. (2020). Heat and mass transfer: Fundamentals and applications (6th ed.). McGraw-Hill Education.
Weiterführende Literatur	Software used: in case, information will be provided at the beginning of the course.
Weitere Informationen	
Ziele für nachhaltige Entwicklung (SDGs)	Industrie, Innovation und Infrastruktur, Bezahlbare und saubere Energie