

Syllabus

Kursbeschreibung

Titel der Lehrveranstaltung	Labor der Werkstoffkunde für Energieeffizienz
Code der Lehrveranstaltung	42620
Zusätzlicher Titel der Lehrveranstaltung	
Wissenschaftlich-disziplinärer Bereich	NN
Sprache	Englisch
Studiengang	Berufsbildender Bachelor in Holztechnik
Andere Studiengänge (gem. Lehrveranstaltung)	
Dozenten/Dozentinnen	Dott. Chiara Tardini, Chiara.Tardini@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/42844
Wissensch. Mitarbeiter/Mitarbeiterin	
Semester	Erstes Semester
Studienjahr/e	2
KP	3
Vorlesungsstunden	0
Laboratoriumsstunden	30
Stunden für individuelles Studium	45
Vorgesehene Sprechzeiten	9
Inhaltsangabe	Thermal bridges: how to avoid them, given a tiny house with different structural materials, located in different places across Italy. Choice of the materials/elements (windows, insulation with the proper thermal properties. Calculation of winter and summer heat balance (thermal transmittance of the wall, Thermal loss, Ventilation loss, Solar

	gains, Internal gains).
Themen der Lehrveranstaltung	Lab on a tiny house with different structural materials, located in various places across Italy. Choice of the materials/elements (windows, doors, insulation with the proper thermal properties) to fulfill the requirements according to the Minimum Requirements Decree (Ministerial Decree of October 28, 2025) . Calculation of winter and summer heat balance (thermal transmittance of the wall, Thermal loss, Ventilation loss, Solar gains, Internal gains).
Stichwörter	Thermal bridges, Thermal loss, Ventilation loss, Solar gains, internal gains, Winter and summer heat balance
Empfohlene Voraussetzungen	None.
Propädeutische Lehrveranstaltungen	
Unterrichtsform	Project-based learning. Each class is introduced by a brief presentation of the topic to be analysed.
Anwesenheitspflicht	Attendance is not compulsory but highly recommended.
Spezifische Bildungsziele und erwartete Lernergebnisse	The lab is related to the analysis of a case-study (a small building) with the structural element made of timber, reinforced concrete, masonry, (at student's choice) located in different cities (different climate zones) in which any thermal bridge should be avoided. The purpose of the course is to choose the best material with the proper thermal properties to avoid all the eventual thermal bridges. Students will be aware of the ethical implications of their work in materials science, including environmental and sustainability concerns. Analyzing the performance of materials in various environments and conditions. Intended Learning Outcomes (ILO) Knowledge and understanding: 1. Knowledge of the thermal properties of materials and understanding of the best solution for an energy effective use of building materials and components

	2. Knowledge of the environmental impact of insulation materials Applying knowledge and understanding: 3. Applying knowledge of thermal properties of building materials to select appropriate materials to avoid thermal bridges in the case-study building Making judgments on: 4. the sustainability and environmental impact of materials 5. Selection of the most proper material according to the specific energy saving need. Communication skills: 6. Students will learn to communicate their findings and collaborate with others in interdisciplinary teams 7. Writing technical reports on the work carried out during the Lab Learning skills 8. Ability to deal with problems in a systematic way and find appropriate problem-solving solutions.
Spezifisches Bildungsziel und erwartete Lernergebnisse (zusätzliche Informationen)	
Art der Prüfung	The exam is conducted via an oral presentation (possibly jointly with the course of Structural Mechanics) of the project carried out during the semester. An A1 poster with the drawings and the materials adopted and a written technical report must be prepared and delivered one week before the final presentation (or the exam). The exam will be graded on a pass/fail basis. Formative Assessment Form: A1 Poster with drawings and list of materials; ILOs assessed: 1,2,3,8. Technical report; ILOs assessed: 1,2,3,4,5,6,7,8
Bewertungskriterien	Pass/Fail grading. Criteria for grading: comprehension, problem-solving skills, technical competence, and correct calculation will be evaluated.
Pfichtliteratur	KlimaHaus <i>Catalogue of Thermal Bridges</i>, 2023

	Minimum Requirements Decree (Ministerial Decree of October 28, 2025)
Weiterführende Literatur	
Weitere Informationen	Software used: Autocad 2D, Canva.
Ziele für nachhaltige Entwicklung (SDGs)	Nachhaltiger Konsum und Produktion