Syllabus

Kursbeschreibung

Titel der Lehrveranstaltung	Werkstoffkunde
Code der Lehrveranstaltung	42619
Zusätzlicher Titel der Lehrveranstaltung	
Wissenschaftlich-disziplinärer Bereich	ING-IND/22
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	30
Laboratoriumsstunden	0
Stunden für individuelles Studium	45
Vorgesehene Sprechzeiten	9
Inhaltsangabe	List of topics Mechanical behaviour and thermal properties of: • Metals and metals alloy • Reinforced concrete • Ceramics • Glass • Polymers and natural insulation materials The decay and durability of wood elements will be also

	investigated along with the decay of reinforced concrete structures.
Themen der Lehrveranstaltung	Mechanical behaviour and thermal properties of: • Metals and metal alloys • Reinforced concrete • Ceramics • Glass • Polymers and natural insulation materials The decay and durability of wood elements will be also investigated along with the decay of reinforced concrete structures.
Stichwörter	Mechanical properties, Metals, Reinforced concrete, Glass, Durability of Timber, Timber coatings
Empfohlene Voraussetzungen	None.
Propädeutische Lehrveranstaltungen	
Unterrichtsform	Frontal lectures, exercises, seminars.
Anwesenheitspflicht	Attendance is not compulsory but highly recommended.
Spezifische Bildungsziele und erwartete Lernergebnisse	The course gives a general overview of scientific contents related to science of materials with a focus on the energy efficiency. The aim of the course is to acquire the knowledge of the properties and characteristics of materials. The building materials will be dealt with, are: metals and metal alloys, ceramics, polymers and glass. The mechanical and thermal behavior of these materials will be analyzed, and the different properties of similar materials will be compared. This is the basic knowledge that will consent in the Lab of Material Sciences for energy efficiency to choose the proper material according to the specific need. Students will develop a strong foundation in material science principles, including atomic and molecular structure, bonding, and phase diagrams. Intended Learning Outcomes (ILO) Knowledge and understanding: 1. Knowledge of the key concepts and technologies of building materials 2. Knowledge of the thermal properties of materials and understanding of the best solution for an energy effective use of building materials

	3. Knowledge of the mechanical properties of selected materials and metals 4. Knowledge of the methods to increase the durability of materials and avoid the decay process 5. Understand the relationship between material structure and properties Applying knowledge and understanding: 6. to mechanical calculations 7. to the laboratory of Materials science for energy efficiency 8. to Materials Science relevant to engineering Making judgments on: 9. Mechanical and thermal aspects of material science 10. Selection of the most proper material according to the specific energy saving need. Communication skills: 11. Express mechanical problems in writing Learning skills 12. 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	Examination of the course is conducted via a written and oral exam. The written exam is related to ascertain the content of the course through exercises and an oral exam on the topics analyzed. Formative Assessment: Form: in class exercises Lenght/Duration: 6 x 20 minutes ILOs assessed: 3,6,11,12 Summative assessment: Written exam: 60%; Lenght/duration: 150 minutes; ILOs assessed: 1,2,3,4,5,6,7,8,9,10,11,12 Oral exam: 40%; Lenght/duration: 30 minutes; ILOs assessed: 1,2,3,4,5,6,7,8,9,10,11,12
Bewertungskriterien	Grading with a single final grade. Criteria for grading: comprehension, problem-solving skills, technical competence and correct calculation of results will be

	evaluated.
Pflichtliteratur	Callister W., Rethwisch D.G., *Materials Science and Engineering*, Wiley & Son
Weiterführende Literatur	Taylor G.D. *Materials in construction*, Longman Scientific &Technical, 1994
Weitere Informationen	
Ziele für nachhaltige Entwicklung (SDGs)	Hochwertige Bildung