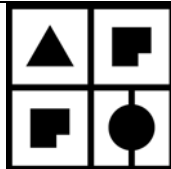


	UNIVERSITY OF BANJA LUKA				
	Bachelor academic studies Civil Engineering				
Course title	Building materials 2				
Acronym	Status	Semester	Number of lectures	Number of tutorials/practical	ESPB
OG09GM2	mandatory	4	2L	2P	5.0
Lecturer	prof. dr Gordana Broćeta				
Prerequisites			Type of prerequisites		
Building materials 1			for course attendance – previously completed (attended); for course examination – previously passed		
Aim of the course					
Students will be able to understand and analyze optimal solutions in the field of structural building materials and their selection in accordance with environmental conditions during service life.					
Learning outcomes					
Upon completion of the course, students will acquire fundamental knowledge of binders, mortars, concretes, timber, wood-based products, metals, and thermal insulation materials, including their basic properties, testing methods, performance characteristics, and the advantages and limitations of their application. In addition, students gain insight into contemporary principles of digitalization of construction materials through the development and use of product catalogues integrated into BIM software.					
Course content					
Binders (classification and properties). Mineral (inorganic) binders – building lime, gypsum, and cements. Mortars (constituent materials; properties of fresh mortar mixes and hardened mortars; types of mortars – masonry mortars, rendering mortars, and special mortars). Concrete (historical development; constituent materials; classification; applications; fundamental properties in fresh and hardened states; structure of hardened concrete; general principles of concrete technology). Lightweight concretes and prefabricated elements. Timber and wood-based products (macro- and microstructure of wood; chemical composition; types of wood; defects; physical, mechanical, and rheological properties; durability and protection). Thermal insulation materials (inorganic and organic insulation materials). Metals (alloy theory; iron and iron-based alloys; corrosion). Introduction to Building Information Model/Modelling/ Management (BIM); advantages of BIM implementation; explanation of BIM dimensions; current state of BIM adoption in Bosnia and Herzegovina and in developed countries worldwide. Digitalization of construction materials through the development of digital product catalogues integrated into BIM software platforms. Overview of relevant ISO standards governing the digitalization of construction materials within BIM environments.					
Teaching methods					
Lectures and practical exercises. Preparation of course assignments and laboratory exercises under the guidance of teaching staff. Instruction is conducted in classrooms, laboratories, and through fieldwork.					
Literature					
1. M. Muravljov: Građevinski materijali, Naučna knjiga, Beograd, 2000. (Original title) 2. M. Muravljov, D. Jevtić: Građevinski materijali 2, Akademski misao, Beograd, 2003. (Original title) 3. G. Broćeta, M. Malešev, V. Radonjanin: Građevinski materijali 2, prezentacije predavanja, Arhitektonsko-građevinsko-geodetski fakultet Univerziteta u Banjoj Luci, Banja Luka. (Original title) 4. A. Savić, A. Radević, M. Aškrabić: Građevinski materijali – Zbirka rešenih ispitnih zadataka, Građevinski fakultet Univerziteta u Beogradu, Akademski misao, Beograd, 2023. (Original title) 5. S. Živković: Građevinski materijali – Zbirka rešenih testova, Građevinska knjiga, Beograd, 1998. (Original title) 6. M. Muravljov, S. Živković: Zbirka rešenih ispitnih zadataka, Građevinski fakultet Univerziteta u Beograd i Građevinska knjiga, Beograd, 1998. (Original title)					
Methods of knowledge assessment and grading					
Elaborate, seminar paper, computational (problem-solving) component of the examination, entry (diagnostic) test, and oral examination.					

Activity	Pre-exam obligations	Exam
2+2+6	15+5	30+10+30
Note		
Modernization of course through the activities of the ERASMUS project SKILL2SUSTAIN.		
Name of lecturer that prepared syllabus		
prof. dr Gordana Broćeta		