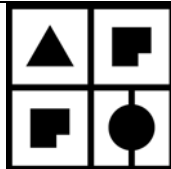


	UNIVERSITY OF BANJA LUKA				
	Bachelor academic studies Architecture				
Course title	Principles of structuring architectural buildings				
Acronym	Status	Semester	Number of lectures	Number of tutorials/practical	ESPB
OA19PKAO	mandatory	4	2L	1P	4.0
Lecturer	prof. dr Gordana Broćeta, prof. dr Anđelko Cumbo				
Prerequisites			Type of prerequisites		
None			None		
Aim of the course					
Students will be able to understand and analyze optimal solutions in the field of structural systems made of reinforced concrete, timber, and steel for building construction.					
Learning outcomes					
Upon completion of the course, students will acquire fundamental knowledge of structural materials, their testing methods, and the conceptual design of structures and structural elements for various types of buildings made of concrete, timber, and steel, considering load conditions, including seismic effects and modern principles of digitization when structuring architectural buildings.					
Course content					
Introduction to structural design principles. Introduction to BIM; advantages of applying BIM; clarifications of BIM dimensions; the state of BIM application in B&H and developed countries of the world; examples of BIM software application. Basic terminology in structural design. Fundamental construction materials: mechanical and structural properties, testing methods. Basic principles of building design: structural systems and components, loads, modeling, and calculation methods. Foundations of structures: construction soil properties and fundamentals of designing shallow and deep foundations (strip foundations, footings, grade beams, raft foundations, piles, and diaphragms). Seismic design of buildings: general concepts of earthquakes, principles of seismic design – selection of structural systems and foundations, plan and vertical configuration for masonry and reinforced concrete structures. Concrete structures: characteristics, design principles, structural details, and reinforcement principles. Timber structures: properties and calculation of timber elements, joints and connections, traditional roof structures. Steel structures: properties and calculation of steel elements, connections and joints, trusses, and structural systems for multistory buildings.					
Teaching methods					
Lectures and practical exercises. Development of annual projects with consultations from teaching assistants. Work conducted in classrooms, laboratories, and on-site.					
Literature					
1. G. Broćeta, A. Cumbo: Principles of structuring architectural buildings, Faculty of Architecture, Civil Engineering and Geodesy, University of Banja Luka, ISBN 978-99976-49-73-7, 2025. 2. G. Broćeta: Introduction to BIM, presentation, Faculty of Architecture, Civil Engineering and Geodesy, University of Banja Luka, 2026.					
Methods of knowledge assessment and grading					
Written examination conducted in one or two parts, as selected by the student.					
Activity		Pre-exam obligations		Exam	
2+2+6		40		25+25	
Note					
Modernization of course through the activities of the ERASMUS project SKILL2SUSTAIN.					
Name of lecturer that prepared syllabus					
prof. dr Gordana Broćeta, prof. dr Anđelko Cumbo					