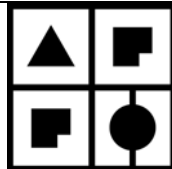


	UNIVERSITY OF BANJA LUKA				
	Master academic studies Energy efficiency in building construction				
Course title	Energy efficient and environmentally friendly building materials				
Acronym	Status	Semester	Number of lectures	Number of tutorials/practical	ESPB
MEE16EGM	elective	2	2L	2P	6.0
Lecturer	prof. dr Gordana Broćeta, prof. dr Darija Gajić				
Prerequisites			Type of prerequisites		
None			None		
Aim of the course					
The student should acquire basic knowledge in the field of architecture, construction and physics that are relevant for sustainable and energy efficient construction of buildings. In addition to the properties and performance of conventional (traditional) materials in architecture, students will be introduced to modern materials and structures that directly affect the energy efficiency of buildings.					
Learning outcomes					
Students will master the necessary knowledge of building physics, architecture and construction, and the physical parameters of materials that are relevant in the construction of energy efficient buildings, conventional and innovative materials. Students will also learn about the parameters of materials that are important for sustainable construction and global climate change in general – estimated built-in energy – non-renewable and CO ₂ emissions in the life cycle of materials to the natural environment from start to finish (waste disposal or reuse (LCA – Life Cycle Assessment) - parameters that are entered in the declarations of materials (products) on environmental impact (EPD – Environmental Product Declaration).					
Course content					
Material characteristics. Elements of conventional thermal opaque insulation. Elements of transparent insulation – low-emission glazing, glazing with glass with special characteristics. Innovative thermal insulation – transparent thermal insulation and vacuum insulation panels. Material life cycle assessment and declaration of materials on environmental impact. The market of construction materials important for energy efficiency in the EU, in the environment and their availability, as well as production in Bosnia and Herzegovina. Examples of declarations of conformity of materials in the EU and Bosnia and Herzegovina, as well as examples of declarations of materials on environmental impact in the EU.					
Teaching methods					
Lectures, auditory exercises, consultations.					
Literature					
1. Hegger, M., Auch-Schwelk V., Fuchs M. and Rosenkranz T., Construction Materials Manual, Basel, Boston, Berlin: Birkhäuser, 2006. 2. Schittich, C., In Detail: Building Skins, new enlarged edition, Basel, Boston, Berlin: Birkhäuser, 2006. 3. Schittich, C., Staib G., Balkow D., Schuler M. and Sobek W., Glass Construction Manual, Basel, Boston, Berlin: Birkhäuser, 1999.Wigginton, M. Glass in Architecture, London: Phaidon Press Ltd, 1996. 4. Berge, B., The Ecology of Building materials (second edition), Oxford: Architectural Press, 2009. 5. Hegger, M., Fuchs M., Stark T. and Zeumer M., Energy Manual: sustainable architecture, Basel, Boston, Berlin: Birkhäuser, 2008. 6. Gajić D., Broćeta G., Material life cycle assessment and declaration of materials on environmental impact with examples of declarations, presentation, Faculty of Architecture, Civil Engineering and Geodesy, University of Banja Luka, 2026.					
Облици провјере знања и оцјењивање					
Homework and seminar work, written and oral exam.					
Activity		Pre-exam obligations		Exam	
2+2+6		40		50	
Note					

Modernization of course through the activities of the ERASMUS project SKILL2SUSTAIN.
Name of lecturer that prepared syllabus
prof. dr Gordana Broćeta, prof. dr Darija Gajić