



Subject card

Subject name and code	Technology of Building Materials, PG_00018190						
Field of study	Chemistry in Construction Engineering						
Date of commencement of studies	October 2020	Academic year of realisation of subject			2020/2021		
Education level	first-cycle studies	Subject group			Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			Polish		
Semester of study	2	ECTS credits			2.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Process Engineering and Chemical Technology -> Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Anna Zielińska-Jurek					
	Teachers	Szymon Dudziak dr inż. Aleksandra Małachowska dr hab. inż. Anna Zielińska-Jurek					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	15.0	30
	E-learning hours included: 0.0 Adresy na platformie eNauczanie: Technologie Materiałów Budowlanych - Moodle ID: 13162 https://enauzanie.pg.edu.pl/moodle/course/view.php?id=13162						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM		
	Number of study hours	30	2.0	18.0	50		
Subject objectives	Knowledge in the field of production technology, processing, recovery of basic building materials (glass, ceramics, concrete, adhesives).						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K6_U06	Knowledge of the characteristics of building materials, grain size analysis etc			[SU4] Assessment of ability to use methods and tools		
	K6_W11	The student has elementary knowledge of the basic concepts and problems of QA, work organization and integrated management. The student has knowledge in the field of quality control of construction materials and products and basic legal acts in the field of management of chemical substances, including construction chemicals			[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation		
	K6_W05	The student has knowledge of the characteristics, classification and production of building materials, including: stone and ceramic materials, minerals, metallic materials, polymer binders, composites, glass. The student has knowledge of the applications and global development trends of the above-mentioned materials.			[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation		

Subject contents	Lecture: Classification of building materials. Stone materials (rocks, sands, gravel). Ceramic materials. Minerals binders. Masonry products. Regular concrete, high-performance concrete, self-consolidation concrete. Vacuum concretes. Wood and wood-like materials. Glass. Plastics. Paint supplies. Bitumen binders and products. Metals and metal constructions. Insulating materials and thermal insulating materials. Seminar: Basic characteristics of building materials and products. Hardness measurement, Mohs scale, Vickers scale and Rockwell scale. Mineral binders. The mechanism of hardening of binders for lime, gypsum and concrete binders (hydrolysis, hydration and carbonization). Preparation of self-cleaning concretes with titanium dioxide. Computing in building materials chemistry. Construction aggregates. Aggregate pollytag: manufacturing process. Crushing and grinding of building materials. Properties of materials based on sieve analysis. Building glass. Masonry products. Manufacturing and characterization of concretes (concrete classifications, content and concrete mixing methods).		
Prerequisites and co-requisites	Basic knowledge of inorganic chemistry and organic chemistry		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Midterm colloquium	50.0%	55.0%
	Contribution to activities	50.0%	45.0%
Recommended reading	Basic literature	1. Stefańczyk B (red), Budownictwo ogólne tom 1 Materiały i wyroby budowlane, Arkady, Warszawa, 2009.	
	Supplementary literature	(in polish) 2. Osiecka E., Materiały budowlane. Spoiwa mineralne i kruszywa, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2005. 3. Osiecka E., Materiały budowlane. Kamień. Cerami. Szkło, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2010. 4. Osiecka E., Materiały budowlane. Tworzywa sztuczne, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2005.	
	eResources addresses	Technologie Materiałów Budowlanych - Moodle ID: 13162 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=13162	
Example issues/ example questions/ tasks being completed	<p>Classification of ceramic</p> <p>Binding and hardening of gypsum binders, lime, cement</p> <p>Discuss the design of concrete by three equations,</p> <p>Discuss the corrosion of reinforcing steel in concrete</p> <p>How does acid rain can affect the concrete?</p>		
Work placement	Not applicable		