



Subject card

Subject name and code	Building materials with concrete technology, PG_00044377						
Field of study	Civil Engineering						
Date of commencement of studies	October 2021		Academic year of realisation of subject		2022/2023		
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	Part-time studies		Mode of delivery		at the university		
Year of study	2		Language of instruction		Polish		
Semester of study	3		ECTS credits		8.0		
Learning profile	general academic profile		Assessment form		exam		
Conducting unit	Department of Mechanics of Materials and Structures -> Faculty of Civil and Environmental Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor		mgr inż. Lucyna Grabarczyk				
	Teachers		mgr inż. Lucyna Grabarczyk dr inż. Elżbieta Haustein				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	25.0	0.0	0.0	55
	E-learning hours included: 0.0						
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	55		7.0		138.0	200
Subject objectives	Acquainted with the classification and determination of technical characteristics of building materials, concrete components, concrete mixtures and hardened concrete; selection of concrete components and determination of concrete composition, classification and use of concrete, basic technological processes in concrete production.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_U10] can prepare cost estimation and schedule of construction works; is able to make basic economical analysis of engineering investment	The student selects the appropriate components (type of aggregate, cement, admixture, additive) and methods of ordinary concrete design.	
	[K6_W13] Knows the most popular construction materials and basics of technology of its fabrication	The student knows the properties of basic building materials. The student is able to perform basic tests of building materials.	
	[K6_U12] knows rules of manufacturing and application of building materials, is able to properly choose them; is able to make simple laboratory experiments for judging quality of building materials	The student knows the basic components of concrete. The student knows the basic methods of testing the components of concrete, concrete mix and concrete. Student designs ordinary concretes. The student knows the methods of transporting concrete mix. The student knows the concrete care methods. The student is able to design concrete in accordance with PN-EN 206: 2014	
	[K6_W01] has knowledge of selected branches of mathematics, physics and chemistry, which is a base of construction subjects, such as construction theory and material technology and is needed to formulate and solve typical problems of civil engineering	Student designs concrete taking into account the purpose, method of laying and compacting concrete mix.	
Subject contents	Material trends in modern construction. Technical characteristics of building materials. Ceramic building materials. Products based on lime, cement and gypsum binders. Building glass - properties and products used in construction. Wood and wood-based construction products. Materials for thermal insulation and noise protection. Bituminous and artificial resin materials for moisture insulation. Plastics - properties, classification, products, use in construction. The origin and definition of concrete. Concrete components: binders, aggregates, admixtures, additives according to current standards. Basic properties of binders. Lime and gypsum binders; types and properties. Cement types and classifications. Main and secondary components, chemical and mineral composition. Special cements. aggregates; classification, origin, properties. Make-up water. Admixtures and additions. Concrete mix - consistency, workability, homogeneity. Selected methods of concrete mix composition design. Concrete mix testing. Concrete testing. Analysis of concrete test results. Concrete mix production. Vibrate. Effect of temperature on young concrete. Concrete care.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Test	50.0%	50.0%
	Report on laboratory tests	100.0%	50.0%
Recommended reading	Basic literature	1. Jamróży Z.; Beton i jego technologie. PWN Warszawa, 2000 2. Kluz T., Eman K.: -Projektowanie betonów. Arkady Warszawa 1969. 3. Neville A. M.: -„Właściwości betonu”, Polski Cement Kraków 2000 4. Małolepszy J.; Deja J; Brylicki W, Gawlicki M: -Technologia betonu. Metody badań 5. Piasta J., Piasta W.: - Beton zwykły. 6. https://pl.scribd.com/doc/54313994/Technologia-betonu	
	Supplementary literature	1. Praca zbiorowa. Budownictwo ogólne tom 1 i 2 Arkady 2005, 2006 2. Bukowski B.; Kuczyński: – Budownictwo betonowe. Tom I i II. Arkady, Warszawa 1977	

	eResources addresses	Adresy na platformie eNauczenie: Materiały budowlane z technologią betonów - 2022/23 - Moodle ID: 21970 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=21970
Example issues/ example questions/ tasks being completed	1. Discuss the basic properties of clinker bricks, roof tiles, building glass, cellular concrete elements. 2. Discuss the components of concrete. 3. Discuss 1 concrete design method. 4. Discuss the test methods for concrete mix and concrete.	
Work placement	Not applicable	

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