



COURSE SPECIFICATION

Course code	full-time:	B1-3-307
	part-time:	BN1-3-307
Course title in Polish	Technologia betonu	
Course title in English	Concrete Works Technology	
Valid from academic year	2023/2024	

CURRICULAR ALIGNMENT

Programme	CIVIL ENGINEERING
Level	first-cycle
Programme profile	academic
Mode of attendance	full-time; part-time
Specialism	all
Academic unit responsible for the course	Department of Construction Technology and Project Management
Course coordinator	prof. dr hab. inż. Jerzy Wawrzeńczyk
Approved by	prof. dr hab. inż. Grzegorz Świt

COURSE DESCRIPTION

Teaching block	major	
Course status	required	
Language of instruction	Polish	
Semester of delivery	full-time	semester III
	part-time	semester III
Prerequisites	Building materials	
Exam (YES/NO)	NO	
ECTS	2	

Mode of instruction		lecture	class	lab	project	other
No. of hours per semester	full-time	15			15	
	part-time	10			10	

Learning outcomes

Category of outcome	Outcome code	Course learning outcomes	Corresponding programme outcome code
Knowledge	W01	Students know and understand basic physical and chemical phenomena and processes related to concrete mix and hardened concrete.	B1_W01 B1_W02
	W02	Students have knowledge of heat and moisture effects on concrete properties.	B1_W21
	W03	Students have knowledge of concrete works technology and management.	B1_W13
Skills	U01	Students are able to use basic standards and guidelines for the design, construction and maintenance of building structures and their components.	B1_U12
	U02	Students can organize work on a construction site in accordance with the principles of technology, organization and management in construction.	B1_U18 B1_U19
Competence	K01	Students are able to work independently and cooperate in a team on an assigned task.	B1_K01
	K02	Students are responsible for the reliability of the results obtained.	B1_K02
	K03	Students describe the results obtained and formulate conclusions.	B1_K04

COURSE CONTENT

Teaching mode*	Topics covered
lecture	The influence of concrete production technology and concrete works execution on the structure's durability. Technical specification and applicable construction regulations.
	Concrete mix production and control. Organization of delivery, internal transport and concrete placement.
	Concrete placement and compaction methods. Division into plots and the rules for construction and expansion joints.
	Concrete works organization for walls, columns and ceilings. Errors in concreting.
	Causes of thermal-shrinkage deformations. Maintenance and protection of young concrete.
	Methods of concrete strength control in structures.
	Concrete works organization in cold seasons.
lab	Discussion on examples of concrete structures implementation: foundation slab, industrial floors, walls and ceilings of a public building, bridge structure, auditorium.
	Developing a technology for the implementation of the assigned case (project topic) in accordance with guidelines for the technical specification preparation.

METHODS OF LEARNING OUTCOMES VERIFICATION

Learning outcome	Verification methods					
	Oral examination	Written examination	Test	Project	Report	other
W01			X			
W02			X			
W03			X			
U01			X			
U02			X			
K01				X		
K02				X		
K03				X		

ASSESSMENT

Teaching mode	Assessment type	Assessment criteria
lecture	mark-based	<i>Minimum a passing grade on the test</i>
lab	mark-based	<i>Minimum a passing grade on the project</i>

STUDENT WORKLOAD

ECTS weighting														
	Activities	Student workload										h		
		full-time					part-time							
		W	C	L	P	S	W	C	L	P	S			
1.	Scheduled contact hours	15			15		10			10				h
2.	Other (office hours, exams)	2			2		2			2				h
3.	Total number of contact hours	34					24					h		
4.	Number of ECTS credits for contact hours	1.4					1					ECTS		
5.	Independent study hours	16					26					h		
6.	Number of ECTS credits for independent study	0.6					1					ECTS		
7.	Practical hours	25					25					h		
8.	Number of ECTS credits for practical hours	1					1					ECTS		
9.	Total workload	50					50					h		
10.	ECTS credits for the course <i>1 ECTS credit =25 student learning hours</i>	2										ECTS		

READING LIST

1. Neville A.M.: Właściwości betonu. Polski Cement, Kraków 2012.
2. Piasta J., Piasta W.G.: Beton Zwykły, Arkady Warszawa 1994.
3. Jamróży Z.: Beton i jego technologie. PWN, Warszawa-Kraków, 2000.
4. Szydło A.: Nawierzchnie drogowe z betonu cementowego – teoria, wymiarowanie i realizacja. Polski Cement, Kraków 2004.
5. Orłowski Z.: Podstawy technologii betonowego budownictwa monolitycznego. PWN, Warszawa 2010.
6. Szwabowski J., Gołaszewski J.: Technologia betonu samozagęszczalnego. Polski Cement, Kraków 2010.
7. Rusin Z.: Technologia betonów mrozoodpornych. Polski Cement, Kraków 2002.
8. Wawrzeńczyk J.: Metody badania i prognozowania mrozoodporności betonu. Politechnika Świętokrzyska, Kielce 2017.
9. Golda A. i inni: Badanie betonu w konstrukcji w świetle aktualnych norm i wytycznych. SPBT, Kraków 2020.
10. Kiernożycki W.: Betonowe konstrukcje masywne. Cement Polski, Kraków 2003.
11. Wytyczne wykonywania robót budowlano-montażowych w okresie obniżonych temperatur. Instrukcja ITB nr 282, Warszawa 2011.
12. Ogólne Specyfikacje Techniczne GDDKiA dot. obiektów inżynierskich.
13. Ogólne Specyfikacje Techniczne GDDKiA dot. nawierzchni betonowych.
14. Materiały konferencyjne- "Dni Betonu- Tradycja i Nowoczesność". Cement Polski, 2000-2022.
15. Czasopisma techniczne: Inżynieria i Budownictwo, Materiały Budowlane, Budownictwo monolityczne, Budownictwo Technologie Architektura.
16. Normy: PN-EN-206 i związane, PN-EN-12390.