



COURSE SPECIFICATION

Course code	full-time:	B1-6-604
	part-time:	BN1-6-604
Course title in Polish	Podstawy mostownictwa	
Course title in English	Fundamentals of Bridge Design and Construction	
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 Strength of Materials and Building Structures
Course coordinator	prof. dr hab. inż. Grzegorz Świt
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 VI
	part-time	semester VI
Prerequisites	Concrete Structures 1, Metal Structures 1, Fundamentals of precasting (see 506/507)	
Exam (YES/NO)	NO	
ECTS	2	

Mode of teaching		lecture	class	lab	project	other
Number of hours per semester	full-time:	15			15	
	part-time:	10			12	

LEARNING OUTCOMES

Category	Code	Learning outcomes	Corresponding programme outcome code
Knowledge	W01	Students are familiar with selected topics from construction standards - Eurocodes: EC0, EC1, EC2, EC3 and EC4	B1_W08
	W02	Students demonstrate knowledge of the basics of design and analysis of girder and beam-plate bridges.	B1_W10
	W03	Students have a basic knowledge of the works technology, workmanship, and operation of bridges.	B1_W12
Skills	U01	Students are able to determine and compile the loads acting on girder and beam-plate bridges.	B1_U03
	U02	Students can prepare and interpret construction and structural drawings in bridge construction.	B1_U07
	U03	Students are able to design simple RC bridge structures and elements and their components, i.e. slab, beams.	B1_U14
Competence	K01	Students are able to work independently.	B1_K01
	K02	Students are responsible for the reliability of results obtained.	B1_K02
	K03	Students are aware of the need to improve professional and personal competence	B1_K03

COURSE CONTENT

Teaching mode*	Topics covered
lecture	Key concepts, classifications, materials, loads.
	Timber bridges - basic elements, loads, construction.
	Culverts - loads, divisions, construction technology.
	Concrete bridges - shaping cross sections, concrete slab spans, ribbed spans, precast beam spans.
	Legal, economic and material aspects of bridge construction.
	Basic bridge construction technologies.
	Bridge equipment: bearings (types, dimensions), expansion joints, drainage systems, insulation.
project	Design of a bridge structure (bridge or overpass): Preliminary design (selection of structure, cross-section, division into spans, load accumulation). Static strength calculations of a plate or a plate and beam bridge system. Architectural and structural drawings.

METHODS OF LEARNING OUTCOMES VERIFICATION

Learning outcome	Verification methods					
	Oral exam	Written exam	Test	Project	Report	Other
W01			X	X		
W02			X	X		
W03			X	X		
U01			X	X		
U02			X	X		
U03			X	X		
K01			X	X		
K02			X	X		
K03			X	X		

ASSESSMENT

Teaching mode*	Assessment type	Criteria
lecture	mark-based	<i>Scoring at least 50% on the final test.</i>
project	mark-based	<i>Obtaining a passing grade in the project oral defense.</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			12				h
2.	Other (office hours, exams)	2			2		2			2				h
3.	Total number of contact hours	34					26					h		
4.	Number of ECTS credits for contact hours	1,4					1					ECTS		
5.	Independent study hours	16					24					h		
6.	Number of ECTS credits for independent study	0,6					1					ECTS		
7.	Practical hours	25					27					h		
8.	Number of ECTS credits for practical hours	1,0					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												

READING LIST

1. Siwowski T., Sobala D., Michalak E., Kulpa M., Janas L., Trojnar K., Duda A.: Projektowanie mostów wg Eurokodów, Wyd. ELAMED, 2016.
2. Lorenz W., Kożuch M., Balcerowiak S.: Wybrane zagadnienia modelowania pręseł mostów belkowych, Dolnośląskie Wydawnictwo Edukacyjne, 2018.
3. Madaj A., Wołowicki W.: Projektowanie mostów betonowych, Wyd. Komunikacji i Łączności, 2010.
4. Radomski W., Kasprzak A.: Poszerzanie mostów, PWN, 2017.
5. Madaj A., Wołowicki W.: Budowa i utrzymanie mostów. Wymagania techniczne, WKŁ, 2013.
6. Madaj A., Wołowicki W.: Podstawy projektowania budowli mostowych, WKŁ, 2012.
7. Biliszczyk J.: Mosty podwieszane. Projektowanie i realizacja, ARKADY, 2006.
8. Biliszczyk J., Machelski Cz.: Obiekty mostowe na autostradach i drogach ekspresowych, DWE, 2009.
9. Madaj A., Wołowicki W., Karlikowski J.: Mosty zespolone stalowo-betonowe. Zasady projektowania wg PN-EN-1994-2.
10. Machelski Cz.: Ruchome obciążenia obiektów mostowych, DWE, 2015.
11. Łucyk-Ossowska J., Radomski W.: Urządzenia dylatacyjne w mostowych obiektach dróg, WKiŁ, 2011.
12. Flaga A.: Mosty dla pieszych, WKiŁ, 2011.
13. Biliszczyk J.: Mosty wstęgowe, DWE, 2016.
14. Machelski Cz.: Modelowanie mostowych konstrukcji gruntowo-powłokowych, DWE, 2008.
15. Bień J.: Uszkodzenia i diagnostyka obiektów mostowych, WKiŁ, 2010.