



Subject card

Subject name and code	Bridges , PG_00049208						
Field of study	Civil Engineering						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2023/2024		
Education level	second-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	1	Language of instruction			Polish		
Semester of study	2	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Engineering Structures -> Faculty of Civil and Environmental Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor	mgr inż. Maciej Malinowski					
	Teachers	mgr inż. Maciej Malinowski					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	20.0	0.0	0.0	10.0	0.0	30
	E-learning hours included: 0.0 Adresy na platformie eNauczenie:						
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	5.0	65.0	100		
Subject objectives	<ul style="list-style-type: none">acquainted with basic principles of designing, shaping, calculation of bridge structures,acquainted with basic information of building of bridges,acquainted with basic methods of diagnosis and repair of bridges,						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_K04] understands the necessity of dissemination civil engineering knowledge in the society and to support the professional ethos of a civil engineer	understands the need to provide the society with knowledge about bridge construction and to maintain the ethos of the profession of a civil engineer			[SK3] Assessment of ability to organize work [SK5] Assessment of ability to solve problems that arise in practice [SK2] Assessment of progress of work		
	[K7_U02] can design and dimension complex steel, concrete (including reinforced), wood and masonry constructions and its details	is able to design and dimension metal structures of bridges as well as their elements and construction details			[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools		
	[K7_W02] knows principles of analysis, design and dimensioning of complex constructions and its elements	knows the principles of analysis, construction and dimensioning of bridges and their construction elements			[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects		

Subject contents	<p>Lectures:</p> <ol style="list-style-type: none"> 1. Principles and basics of shaping, constructing and dimensioning beam, truss, composite(concrete-steel), with orthotropic plate and arch bridges. 2. Construction details of basic types of bridges. 3. Methods of building bridges. 4. Bridge diagnostics - laboratory tests, in situ tests, load tests, monitoring systems. 5. Damages and methods of repair and strengthening of steel bridge structures. <p>Designing:</p> <p>Elements of the railway truss bridge.</p>											
Prerequisites and co-requisites	<p>Strength of materials.</p> <p>Building mechanics.</p> <p>Basics of bridge engineering</p>											
Assessment methods and criteria	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;">Subject passing criteria</th> <th style="width: 30%;">Passing threshold</th> <th style="width: 30%;">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td>projects</td> <td>53.3%</td> <td>50.0%</td> </tr> <tr> <td>lectures</td> <td>53.3%</td> <td>50.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	projects	53.3%	50.0%	lectures	53.3%	50.0%
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projects	53.3%	50.0%										
lectures	53.3%	50.0%										
Recommended reading	Basic literature	<ol style="list-style-type: none"> 1. Malinowski M Materiały do wykładu z Mostów Metalowych I electronic version platform: eNauczanie. 2. Malinowski M., Banaś A. Szafranski M., Materiały pomocnicze do projektowania kratownicowych mostów kolejowych electronic version platform: eNauczanie. 										

	Supplementary literature	<ol style="list-style-type: none"> 1. Rzyński A., Wołowicki W., Skarżewski J., Karlikowski J.: <i>Mosty stalowe</i>, PWN, Warszawa Poznań, 1984. 2. Niemierko A.: <i>Rzecz o kratownicach</i>, WKŁ, Warszawa, 1987. 3. Karlikowski J., Sturzbecher K.: <i>Mosty stalowe. Mosty belkowe i zespolone. Przewodnik do ćwiczeń projektowych</i> Politechnika Poznańska, Poznań, 2003. 4. Karlikowski J., Madaj A., Wołowicki W.: <i>Mostowe konstrukcje zespolone stalowo-betonowe</i>. WKŁ, Warszawa 2007r. 5. Czudek H.: <i>Podstawy mostownictwa metalowego</i>, Politechnika Warszawska, Warszawa, 1997. 6. Hydzik J.: <i>Mosty kolejowe</i>, WKŁ, Warszawa, 1986. 7. Danielski L.: <i>Mosty metalowe</i>, Politechnika Wroclawska, Wroclaw, 1983. 8. Cholewo J., Sznurowski M.: <i>Mosty kolejowe i fundamentowanie</i>, WKŁ, Warszawa, 1965. 9. Korelewski J.: <i>Mosty stalowe</i>, Politechnika Krakowska, Kraków, 1980. 10. Szelański F.: <i>Mosty metalowe</i>, WKŁ, Warszawa, 1966. 11. Pszenicki A.: <i>Mosty stalowe nitowane</i>, Wydawnictwa Komunikacyjne, Warszawa, 1954. 12. Danielski L.: <i>Mosty Metalowe</i>. Politechnika Wroclawska. Wroclaw 1983. 13. Madaj A., Wołowicki W.: <i>Budowa i utrzymanie mostów</i>. WKiŁ, Warszawa 2013. 14. Madaj A., Wołowicki W.: <i>Podstawy projektowania budowli mostowych</i>. WKiŁ, Warszawa 2009. 15. Furtak K.: <i>Mosty Zespolone</i>. PWN, Warszawa 1999. 16. Bień J.: <i>Uszkodzenia i diagnostyka obiektów mostowych</i>. WKiŁ, Warszawa 2010. 17. Siwowski T.: <i>Projektowanie mostów według Eurokodów</i>. Elamed 2016. 18. Siwowski T.: <i>Zastosowanie Eurokodów w projektowaniu mostów</i>. Oficyna Wydawnicza Politechniki Rzeszowskiej, 2016. 19. Siwowski T., Turoń B.: <i>Projektowanie mostów zespolonych według Eurokodu 4</i>. Oficyna Wydawnicza Politechniki Rzeszowskiej, 2016. 20. Karlikowski J., Madaj A., Wołowicki W.: <i>Mosty zespolone stalowo-betonowe. Zasady projektowania wg PN-EN 1994-2</i>. WKŁ 2016 21. Machelski Cz.: <i>Ruchome obciążenia obiektów mostowych</i>. Dolnośląskie Wydawnictwo Edukacyjne 2015.
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	