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 2. 2. Is able to characterize methods of strengthening and refurbishment of steel and concrete bridges - [-KU04,U09] 3. 3. Is able to design of RC bridge modernization - [-KU04,U09] Social competencies: 1. 1. Ability to work single-handedly - [-KK01] 2. 2. Responsibility for honesty of computation results - [-KK02] 								
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				1				
3. 3. Awareness of necessity of constant professional education - [-KK03,K06]								

Assessment methods of	f study outcomes	
Written test on general causes and methods of bridge modernization	on and principles of modernizat	ion design
An exercise concerning design of modernization of RC bridge		
Written exam		
Course descr	ription	
1. General causes, aims and types of bridge modernization		
2. Procedure of design of bridge modernization		
3. Bridge condition cataloguing		
4. Connection used for bridge modernization		
5. Direct and indirect strengthening of steel bridges		
6. Direct and indirect strengthening of concrete supports		
7. Types of bridge refurbishment		
Basic bibliography:		
1. 1. Rybak M., Przebudowa i wzmacnianie mostów. WKiŁ, Warszaw	wa, 1983	
2. 2. Madaj A., Wołowicki W., Budowa i utrzymanie mostów. WKiŁ, W	Warszawa, 1994	
Additional bibliography:		
1. 1. Bartoszewski J., Wzmacnianie i poszerzanie mostów. WKiŁ, W	arszawa, 1962	
2. 2. Spal L., Przebudowa konstrukcji stalowych. Arkady, Warszawa	, 1973	
3. 3. Współczesne metody wzmacniania i przebudowy mostów - refe przez IIL PP oraz Oddział Wielkopolski ZMRP	eraty corocznego seminarium (od 1993r.) organizowanego
Result of average stud	lent's workload	
Activity	Time (working hours)	
Student's wo	rkload	
Source of workload	hours	ECTS
Total workload	75	3
Contact hours	50	1
Practical activities	55	2