Faculty of Civil and Environmental Engineering								
Study programme:	Civil Engi	neering	Degree level: full-time/part-time programme:	Doctor's degree Full-time				
Specialization:	-		Diploma path::	-				
Module name:	Technologies in road construction		Module ID:	DB5012				
Module type:	Elective	Semester: 5	ECTS 1)	1				
No. of hrs in semester:	L - 15	C- 0 CL	- 0 P- 0 Ws- 0	S- 0				
Complete with prerequisites or "-"	Testing and measurement of physical and chemical properties of materials in technique IB3002							
Aims and objectives:	Knowledge of methods of dimensioning construction of pavement, functional and technical specifications of materials used for construction of roads and modern technologies and solutions in road construction.							
Assessment:	Lecture - tests							
Module content:	Analytical and empirical methods of structural design road pavements: prone, semi-rigid and rigid. The functional properties and performance of materials used for the construction of structural layers of pavement. Advanced research methods of road materials: asphalt mixtures with improved operating characteristics and binders (bitumen modified: SBS copolymers, organic-metallic salt, culm rubber, modified asphalt emulsions, foamed bitumen)							
Learning outcomes	Write min. 4, ma following order: I Each learning ou	knowledge - s	Relevance to the programme learning outcomes					
LO1	Student has extended road		K_B3_W02, K_B3_W03,					
LO 2	Student has extende trends in the product		K_B3_W02, K_B3_U04,					
LO 3	Student knows how properties and technic cement concrete		K_B3_U02,					
LO 4	Student knows in de pavements structure		K_B3_W02					

student workload	lecture attendance	15 x 1h =	15						
	participation in classes, laboratory								
	preparation for classes, laboratora								
	work on projects, reports, etc.								
	participation in student-teacher se	5 x 1h =	5						
	implementation of project tasks								
	preparation for and participation in		10						
	preparation for and participation								
	work on projects, reports, etc.								
		SUM: 1)	30						
quantitative indicators			ECTS 4,5)						
	Student workload - activities that require direct teacher participation				0,7				
	Student workloa	10	0,3						
basic references:	 GDDKiA, PG KID: "Katalog typowych konstrukcji podatnych i półsztywnych, Gdańsk 2012. Godlewski D.: "Nawierzchnie drogowe", WKiŁ, Warszawa, 2011 Ministerstwo Infrastruktury, IBDiM: "WT-2 - Nawierzchnie asfaltowe na drogach publicznych", Warszawa, 2010 Piłat J., Radziszewski P.: "Nawierzchnie asfaltowe", WKiŁ, Warszawa, 2010 Orlen Asfalt: "Bitumen Handbook", Płock 2014 								
supplementary references:	1. Lay M.G.: The handbook of road technology, 2009 2. Szydło A.: "Nawierzchnie drogowe z betonu cementowego", Kraków, 2004								
learning outcomes	methods of asse	type of class (if more than one) where the outcomes are assessed							
LO1	written tests	L							
LO 2	written tests	L							
LO 3	written tests	L							
LO 4	written tests	L							
Department:	Division of Road Engineering	Group instructors:		hab. inż. Władysław Gardziejczyk, prof. PB dr inż. Andrzej Plewa					
Date:	08.12.2016r.	Coordinator:	dr hab. inż. Władysław Gardziejczyk, prof. PB dr inż. Andrzej Plewa						