

COURSE DESCRIPTION CARD

BIALYSTOK UNIVERSITY OF TECHNOLOGY		Faculty of Civil Engineering and Environmental Sciences	
Field of study	Level and form of study		Full-time Bachelor Degree
A group of modules /specialty	Education profile		Academic profile
Course name	Transportation infrastructure		Course code IS-FCEE-00276W
Course form(s) and number of hours	L	C	LC
			P
			SW
			FW
			S
	15		15
The programme is valid from	Semester		winter
	ECTS credits		3
	2026/2027		

Introductory courses

Course objectives To familiarize students with transport infrastructure, including roads, streets, pedestrian and cycling facilities, parking areas, and intersections. To present the characteristics road right-of-way devices for drainage, traffic safety and environmental protection.

Framework programme content Introduction to transport infrastructure. Functional and technical classification of roads and streets. Basic requirements for horizontal and vertical design. Characteristics of road traffic. Basic elements of road's cross-sections. Pedestrian and cycling infrastructure. Types of road intersections and junctions. Parking infrastructure and organization. Traffic safety devices and measures. Environmental protection in road transport.

Other information about the course

	Student workload related to:	Total number of hours	including contact	including practical
Calculation:	participation in lectures	15	15	
	participation in other forms of activities	15	15	15
	participation in an examination	2	2	
	participation in consultations	5	5	2
	completion of professional training	0	0	0
	preparation for passing a lecture/an examination	10		
	preparation for practical classes	28		28
	Total number of hours:	75	37	45
Total number of ECTS credits:	3	1,5	1,8	

Expected discipline learning outcomes	Knowledge	Skills	Social competence

Objectives and framework content prepared by dr hab. inż. Robert Ziolkowski, prof. PB **Date:** 17.03.2026

Implementation in the academic year 2026/2027

Programme content	Lecture		
	1	Introduction to transport infrastructure: categorization of roads and streets (2h)	
	2	Fundamental of horizontal and vertical road alignment (3h)	
	3	Road traffic in road infrastructure design (1h)	
	4	Basic elements of road's cross-sections (2h)	
	5	Pedestrian and cycling infrastrucur. Parking infrastructure and organization (3h)	
	6	Characteristics of road intersections (2h)	
	7	Traffic safety devices and measures. Environmental protection in road transport (2h)	
	8		
Programme content	Project		
		1	Conceptual design of a rural road section. Introduction, discussion of the purpose and scope of the project (2h).
		2	Road horizontal alignment design. Evaluation of student's work (4h)
		3	Road vertical alignment design. Evaluation of student's work (6h)
		4	Development of a ross-section of the road. Evaluation of student's work (4h).
		5	Conceptual redesign of a local urban street section. Introduction, discussion of the purpose and scope of the project (2h).
		6	Inventory and analysis of technical characteristics of the street section. Traffic measurements (6h)
	7	Development of a concept for the reconstruction of the existing street section. Evaluation of student's work (4h)	
	8	Completion and project submission (2h).	

Teaching methods (on-site classes)	L Lecture; Lecture with Presentation; Discussion
	P Practice Project, Design Project
Teaching methods (online classes)	L Lecture; Lecture with Presentation; Discussion
	P Practice Project, Design Project
Forms of crediting	L Written Exam
	C Project Completion, Presentation and Discussion
Conditions of crediting	L
	C

Outcome symbols	Expected learning outcomes	Expected learning outcomes defined for the field of study		
		Knowledge	Skills	Social competence
E1	in -depth and extended degree, standard principles and regulations and guidelines for the designing of civil engineering structures and their elements	K_B2_W07		
E2	the knowledge of the life cycle of a civil engineering structure, and knowledge of sustainability of engineering structures, their exploitation, maintenance and modernisation	K_B2_W11		
E3	main development trends in the field of civil engineering and transport and the most important achievements within the field of construction	K_B2_W12		
Skills: the student can				
E4	make a critical analysis of the functioning of existing technical solutions in construction, evaluate these solutions, creatively interpret and present them		K_B2_U02	
E5	design complex structure elements in building, transport, bridge and industrial structures (metal, reinforced concrete, prestressed, composite, wooden, masonry)		K_B2_U04	
Social competence: the student is ready to				
E6	critical evaluation of knowledge and content received in the field of engineering and technical sciences used in solving cognitive and practical problems			K_B2_K01

Outcome symbols	Methods of verification of learning outcomes	Course form subject to verification
E1	Written test; corrections; discussion; project preparation and	L, P
E2	Written test; corrections; discussion; project defence.	L, P
E3	Written test; corrections; colloquium; project defence.	L
E4	Written test; project defence	P
E5	Corrections; discussion; project defence	P
E6	Written test; corrections; project defence	L, P
Basic references	1 Principle of transportation engineering, Partha Chakroborty, 2003	
	2 Handbook of transportation engineering, Myer Kutz, 2001	
	3 Rozporządzenie MTIGW z dnia 24 czerwca 2022 w sprawie przepisów technicznych dróg publicznych	
Supplementary references	1 Traffic and highway engineering, N.J. Garber, L.A. Hoel, 2009	
	2 Gaca S., Suchorzewski W., Tracz M.: Inżynieria ruchu drogowego. Teoria i praktyka, WKiŁ 2009	
Course coordinator	dr hab. inż. Robert Ziółkowski, prof. PB	Date: 17.03.2025