

Description of course		
Code		
Name	<b>Maintenance and management of roadway and railway infrastructure</b>	
Version	2025/26	
<b>A. Place of the course in system of studies</b>		
Level of education	Second degrees studies	
Form and mode of studies	Stationary	
Field of studies	Transport	
Profile	General academic profile	
Specialisation	Main field	
Place of teaching of course	Warsaw University of Technology, Faculty of Transport	
Place of realization of course	Warsaw University of Technology, Faculty of Transport	
Coordinator	Dr Eng. Piotr Woźnica	
<b>B. General characteristic of the course</b>		
Block of courses	Specialization subject	
Group of courses	Technical	
Level of course	Intermediate	
Language of course	English	
Nominal semester	1	
Preliminary requirements	No	
Limit of students	No	
<b>C. Effects of education and manner of teaching</b>		
Purpose of course	Knowledge and skills necessary for efficient management of transport infrastructure	
Effects of education	See Table 1	
Form of didactic studies and number of hours per week	Lecture	15
	Exercise type of course	
	Laboratory	
	Project type of course	15
Contents of education	Lecture: Types of urban and regional transport infrastructure - public roads, railway lines, Rapid Urban Rail systems, tram lines, metro and their managers. Maintenance of transport infrastructure, types of repairs, methods of increasing durability. Transport infrastructure diagnostics, measurement methods and equipment used. Forecasting the condition of infrastructure and planning repairs. Renovation of transport infrastructure, reconstruction of infrastructure. Transport infrastructure management systems Project: Calculation of estimated service life of asphalt pavement. Analysis of railway track sensitivity to features of the track system geometry	
Methods of education	Multimedia presentation	
Methods of evaluation	Lecture: passing in the form of a test, for each correct answer on the test, the student receives one point. To pass, one must obtain over 50% of the points Project: assessment of the correctness of project execution and its defence. The final grade is the average of the grades from the lecture and the project	
Methods of verification of effects of education	In the written exam, the test and open-ended questions (1/3 of all questions) relate to the topics described in the effects W01-W03. The exam is passed if the student provides at least 50% correct answers	
Exam	Yes	
Literature:	1) Modern railway track, Coenraad Esveld, 2001. 2) Railway management and engineering, V. A. Profillidis, An Ashgate Book, 2014. 3) Railway engineering, S. Chandra, M. M. Agarwal, Oxford University Press, 2013. 4) Highway engineering, Martin Rogers, Bernard Enright, Wiley Blackwell, 2016. 5) Highway engineering, Paul H. Wright, Karen K. Dixon, Wiley, 2009. 6) Highway engineering: pavements, materials and control of quality, A. Nikolaidis, CRC Press, 2014.	

	7) Traffic and highway engineering, Nicholas J. Garber, Lester A. Hoel, Cengage Learning, 2014. 8) The handbook of highway engineering, T. F. Fwa (Ed.), Taylor & Francis, 2006. 9) Highway engineering handbook, Roger L. Brockenbrough, McGraw Hill, 2009. 10) Principles of highway engineering and traffic analysis, Fred L. Mannering, Scott S. Washburn, Wiley, 2016.
www	
<b>D. Student's activity</b>	
Number of ECTS points	5
Number of hours of student's job for achievement of education's effect (description):	88h - including: lecture 15 hours, project classes 15 hours, study of literature related to the lecture 15 hours, preparation for the lecture assessment 8 hours, preparation of project documentation in the form of calculations and drawings 30 hours, consultations 3 hours (including consultations regarding project work 2 hours), defence of project work 2 hours
Number of credits ECTS on the course with direct participation of academic teacher	2
Number of credits ECTS on practical activities on the course	3
<b>E. Additional information</b>	
Notes	Sent in USOS
Date of last edition	30.05.2025

**Table 1. General academic profile**

<b>Effect:</b>	<b>Field effects</b>	<b>Verification:</b>	<b>Area effect</b>
<b>Knowledge</b>			
W01	I.P7S_WG.o I.P7S_WK	<i>Has theoretical knowledge related to the management of road, rail and urban transport infrastructure networks, both linear and point-based</i>	Tr2A_W09 Tr2A_W12
W02	I.P7S_WG.o III.P7S_WG	<i>Has knowledge of the maintenance of transport infrastructure, types of repairs of this infrastructure, as well as ways to increase its durability and has knowledge of diagnostics of transport infrastructure, measurement methods and equipment used for this</i>	Tr2A_W05
W03	I.P7S_WG.o III.P7S_WG I.P7S_WK	<i>Has knowledge of forecasting the condition of infrastructure and planning repairs and renovations of transport infrastructure and its reconstruction</i>	Tr2A_W05
<b>Skills</b>			
U01	I.P7S_WG.o III.P7S_WG I.P7S_WK	<i>Is proficient in the maintenance and management of municipal and regional infrastructure</i>	Tr2A_U03
<b>Social competences</b>			
K01	I.P7S_KK I.P7S_KO	<i>Is ready to work in companies managing transport infrastructure</i>	Tr2A_K02