University of Gdańsk

Subject card

Subject name and code	Infrastructure and modern technologies in transport and logistics , PG_00199016						
Field of study	Economics						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2028/2029		
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study Optional subject group Subject group related to scientific research in the field of study		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	3		Language of instruction		Polish		
Semester of study	5		ECTS credits		4.0		
Learning profile	academic		Assessment form		exam		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Ryszard Rolbiecki				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	15.0	0.0	0.0	0.0	30
	E-learning hours included: 0.0						
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		4.0		66.0	100
Subject objectives	The main objective of the course is to familiarize students with the essence and importance of transport infrastructure as the basis for socio-economic development, with theoretical foundations in the field of specificity, principles, models, methods of financing the development of transport infrastructure, taking into account the specificity of the economic calculation of the efficiency of infrastructure investments. The aim of the course is also to familiarize students with the essence, state of development of technology in transport and logistics, indicating the latest trends in this field.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[EKONL3_W07] has an advanced knowledge of the economic and financial principles of the functioning and management of economic entities and organisations as well as the legal, organisational, moral and ethical norms and rules governing the functioning of public institutions	The student knows the specifics of transport infrastructure and understands the basic principles related to the development of infrastructure and technology in transport.	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion
	[EKONL3_W02] has an advanced knowledge of the different types of existing business entities and organisations and public institutions	The student has knowledge about entities responsible for the maintenance and development of transport infrastructure	[SW1] oral statement/ conversation/discussion
	[EKONL3_U03] is able to analyse the causes and course of specific economic and social processes and phenomena, and accurately analyse these phenomena using adequate methods and tools economic and social	The student is able to identify the causes of the existing state of transport development and indicate arguments for choosing specific actions in the field of infrastructure and technology development policy in transport.	[SU1] oral statement/conversation/ discussion [SU2] presentation/project/paper/ report
	[EKONL3_K02] is aware of the level of knowledge in the field of economics and understands the need to deepen and update this knowledge throughout life	The student is aware of the role of infrastructure as a basis for economic development and its importance as a production factor in transport. Hence, he is aware of the need to deepen his knowledge in this area	[SK1] oral statement/conversation/ discussion [SK4] test/exam - oral or written
	[EKONL3_W04] knows the types of economic and social ties and the regularities governing them	The student knows and understands the essence of the relationship between the level of development of transport infrastructure and the level of economic activity of other sectors of the national economy.	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion
	[EKONL3_U01] can correctly interpret economic and social phenomena and apply knowledge of economics, finance and management sciences to explain economic phenomena	The student is able to correctly interpret the effects of the existing state of affairs in terms of infrastructure development and technology in transport.	[SU1] oral statement/conversation/ discussion [SU4] test/exam - oral or written
	[EKONL3_K05] correctly identifies, diagnoses and resolves professional dilemmas and different options for solutions	The student is able to identify and assess using appropriate methods the level of development of infrastructure and technology in transport. The student is able to resolve dilemmas related to the choice of directions of development of infrastructure and technology in transport	[SK2] presentation/project/paper/ report

Subject contents	**1.The essence of transport infrastructure** (definition and specific features, types of transport infrastructure, infrastructure as the basis for transport activities, transport infrastructure as one of the subject areas of transport policy, principles of transport infrastructure development) **2. Interdependencies occurring in the process of transport infrastructure development** (intra- and inter-industry interdependencies, transport infrastructure development models) **3. Methods for assessing the efficiency of infrastructure investments and sources of investment financing** (specificity of economic calculation, calculation of net costs and benefits, incremental calculation, social discount rate, ENPV, B/C, EIRR) **4. The state of infrastructure in transport branches in Poland** (comparative analysis of the level of infrastructure development in Poland against the background of EU countries; effects of errors in the infrastructure development process) **5. Directions of infrastructure development in Poland and Europe** (assumptions of transport policy in relation to infrastructure development in Poland; development of the TEN network as an element of a systemic view of infrastructure development in Europe) **6. Experience in the development of technologies in transport and logistics sectors in Poland and Europe** **7. Development of intermodal technologies in transport** (multimodal and intermodal transport, definition and types of combined transport, conditions for the development of combined transport, forms of rail-road transport, development of combined transport in Europe, problems of the development of combined transport). Content that raises doubts will be further clarified during consultations
Prerequisites and co-requisites	

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Test	51.0%	50.0%
Presentation	51.0%	30.0%
Class participation	51.0%	20.0%

Recommended reading

Basic literature	1. Skorobogatova O., Kuzmina-Merlino I., (2017), Transport Infrastructure Development Performance, Procedia Engineering 178 (2017) 319 329, 2. Dai J. Alvarado R., Ali S., Ahmed Z., Saeed M. S. Meo (2023), Transport infrastructure, economic growth, and transport CO_2, emissions nexus: Does green energy consumption in the transportsector matter? Environmental Science and Pollution Research 30:4009440106, https://link.springer.com/article/10.1007/s11356-022-25100-3 3. Kadyraliev A., Supaeva G., Bakas B., et.al. (2022), Investments in transport infrastructure as a factor of stimulation of economic development, Transportation Research Procedia, Volume 63, 2022, Pages 1359-1369, https://www.sciencedirect.com/science/article/pii/S235214652200401X 4. Yang M. , Hunger R., Berrettoni S., et. al.,(2023), *A review of hydrogen storage and transport technologies*, Clean Energy, Volume 7, Issue, Pages 190216, https://academic.oup.com/ce/article/7/1/190/7126621
Supplementary literature	Khadaroo A.J., Seetana B. (2010), *Transport Infrastructure and Foreign Direct Investment*, Journal of International DevelopmentJ. Int. Dev. 22, 103123 (2010), https://onlinelibrary.wiley.com/doi/epdf/10.1002/jid.1506 Chung S., (2021), Applications of smart technologies in logistics and transport: A review, Transportation Research Part E: Logistics and Transportation Review, Volume 153, September 2021, 102455, https://www.sciencedirect.com/science/article/pii/S1366554521002192
eResources addresses	

Example issues/ example questions/ tasks being completed	What measures can be used to assess the infrastructure potential of the region? How can the level of infrastructure development in individual transport sectors in Poland be assessed against the background of other EU countries? Identification of the effects of the existing level of transport infrastructure development in Poland? What are the premises and problems of intermodal transport development?
Work placement	Not applicable

Document generated electronically. Does not require a seal or signature.