GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Systems theory, PG_00064970		
Field of study	Spatial Development		
Date of commencement of studies	February 2026	Academic year of realisation of subject	2025/2026
Education level	second-cycle studies	Subject group	Obligatory subject group in the field of study Humanistic-social subject group
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	1	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Urban Design and Regional Planning -> Faculty of Architecture -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. Elżbieta Wojnicka-Sycz	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	10.0	5.0	0.0	0.0	0.0	15

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	15	2.0	33.0	50

Subject objectives

The aim of the module is to familiarize students with the system approach to the description of complex processes and structures and to explain the basic concepts of system theory, including the city as a system.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W02] has the knowledge necessary to understand the social, economic, legal and other non-technical conditions of design and planning.Including the principles of creating and developing forms of individual enterprise	Has the knowledge necessary to understand social, economic, legal and other non-technical conditions of design and planning activities and to take them into account in practice related to spatial management.	[SW1] Assessment of factual knowledge
[K7_W04] has in-depth knowledge of issues and technical systems related to the planning, design and implementation of infrastructure projects and urban planning, as well as the life cycle of facilities and systems related to the operation of settlement units	Has in-depth knowledge of issues and technical systems related to the planning, design and implementation of infrastructure projects once with the life cycle of objects and systems.	[SW3] Assessment of knowledge contained in written work and projects [SW2] Assessment of knowledge contained in presentation
[K7_K01] critically evaluates the received content, understands the importance of knowledge in solving cognitive and practical problems, evaluates the risks and can assess the consequences of the activities carried, undertakes in-depth reflection on scientific, ethical and social issues related to the work of urban planner and planner	Critically assesses the received content, understands the importance of knowledge in solving cognitive and practical problems, performs risk assessment and is able to assess the effects of performed activities.	[SK1] Assessment of group work skills

Subject contents

1. The genesis of the system approach, system versus mechanistic approach.
2. The concept of the system, their types and features; system and object and model.
3. System analysis and its application.
4. Systems engineering: system life cycle, indicator analysis, model creation and types, decision theory regarding the selection of system variants.
5. Spatial management and the city as a system.

Prerequisites and co-requisites		
Assessment methods and criteria		

Subject passing criteria	Passing threshold	Percentage of the final grade
Preparation of a project of a city system in groups	51.0%	100.0%

Recommended reading	Basic literature	• J.Habr, J.Veperek, Systemowa analiza i synteza, PWE, Warszawa, 1976 • Cempel C., Teoria i inżynieria systemów, skrypt elektroniczny, neur.am.put.poznan.pl Wojnicka-Sycz E. Paradygmat systemowy w innowacyjności - geneza, ewoluja i ocena, rozdział 1 Teoria systemów - fragmenty monografii udostępniane studentom, monografia w recenzji. • Boordman J., Systems Engineering - An Introduction. Prentice Hall, New York, 1990. • Boyd D. W., System Analysis and Modeling, a Macro to Micro Approach with Multidisciplinary Applications. Academic Press, New York, 2001. • Klaassen J. H., Paelinck J. H. P., Wagenaar S., Systemy przestrzenne. PWN, Warszawa, 1982. • Parysek J.J., Miasto w ujęciu systemowym. [w:] Ruch prawniczy, ekonomiczny i socjologiczny, Rok LXXVII – zeszyt 1, s. 27-53, 2015. • Rappaport A., General Systems Theory. Abacus Press, Cambridge 1986.
	Supplementary literature	• Austin G., Green Infrastructure for Landscape Planning. Integrating human and natural systems. Routledge, London, 2014. • Coveney P., Highfield R., Granice złożoności – poszukiwanie porządku w chaotycznym świecie. Pruszyński i S-ka, Warszawa, 1997. • Heller M., Lubański M., Slaga S. W., Zagadnienia filozoficzne współczesnej nauki – wstęp do filozofii przyrody. Akademia Teologii Katolickiej, Warszawa, 1982. • Jacyna M., Wybrane zagadnienia modelowania systemów transportowych. Oficyna Wydawnicza PW, Warszawa, 2009. • Malisz B., Zarys teorii kształtowania układów osadniczych. Wyd. 2, Arkady, Warszawa, 1981.
	eResources addresses	
Example issues/ example questions/ tasks being completed	1. Spatial management / city as a system. 2. System definition of organization 3. City bike system design etc.	
Work placement	Not applicable	

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