

Course title:	Green infrastructure development
Course title in Polish:	Kształtowanie zielonej infrastruktury
Course for discipline:	Environmental Engineering, Mining and Energy

Semester:	4	Status of course:	faculty	Language:	english
Academic year:		Catalog number:			

Coordinator of course:	dr hab. inż. Renata Giedych
Lecturer od course:	dr hab. Agata Cieszevska, dr hab. inż. Renata Giedych, dr inż. Gabriela Maksymiuk
Executing unit:	Department of Landscape Architecture, Institute of Environmental Engineering
Ordering unit:	Doctoral School SGGW

Assumptions, goals and description of the course:	The aim of the course is to acquire specialist knowledge and skills to apply it in the field of identification and assessment of natural, social and organizational conditions necessary to determine the directions and priorities of green infrastructure development from the scale of the region to the scale of the place, as well as to understand the relationship between the concept of green infrastructure and other concepts of shaping the environment. Content of education: 1) The origins and evolution of the concept of green infrastructure. 2) The role and importance of the concept of green infrastructure as an idea influencing the way of shaping the environment in the 21st century. 3) Functions of green infrastructure (including: adaptation to climate change, protection of biodiversity, ecosystem services). 4) Principles of shaping green infrastructure. 5) Instruments for implementing green infrastructure (including strategic, planning and fiscal). The classes consist of two parts. The first is devoted to the analysis of the literature, aimed at understanding the essence of the idea of green infrastructure and features that distinguish it from related concepts. In the second part, based on the analysis of case studies from various spatial scales, students critically evaluate the solutions used in shaping green infrastructure, including the priorities and principles of its development and the proposed implementation tools.
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Didactic form, number of hours:	exercises, 10 hours
Teaching methods:	Literature studies, case studies, PBL, brainstorming
Limit of people in the group:	15

Learning outcomes

KNOWLEDGE - the graduate knows and understands:	SKILLS - the graduate is able to:	COMPETENCES - the graduate is ready to:
To the extent enabling to revise the existing paradigms in the field/discipline - the world achievements, gathering theoretical background as well as general and selected detailed issues	Carry out critical assessment of the scientific research findings and expert activities and their contribution to the knowledge development in the field/discipline	Critically evaluate the achievements in the field/discipline represented
Major general development trends in the field/discipline		Recognise knowledge in solving cognitive and practical problems characteristic for the area of research (field/discipline) and in an interdisciplinary aspect
		Support the ethos of scientific circles and conduct independent research
The method of verification of learning outcomes:	K - written work S - multimedia presentation C - participation in discussions during class sessions	
Form of documentation of achieved learning outcomes:	Electronic versions of written works and presentations	
Elements and weights of the final grade:	Final evaluation: written work-40%; multimedia presentation-40%; discussion-20%	
Place of the course:	Didactic room	

Basic and supplementary literature

Basic literature:

1. Albro, S. L. 2019. Vacant to Vibrant. Creating successful green infrastructure network. Washington: IslandPress.
2. Benedict M.A., McMahon E. T. 2006: Green infrastruktura : linking landscapes and communities, Washington: IslandPress
3. Brears, R. C. 2018. Blue and Green Cities. London: Palgrave Macmillan UK
4. Firehock, Karen. 2015. Strategic green infrastructure planning: A multiscalar approach. Washington: IslandPress.
5. Grunewald, K., Junxiang Li, Gaodi Xie, i Lennart Kümper-Schlake, red. 2018. Towards Green Cities: Urban Biodiversity and Ecosystem Services in China and Germany. Cham: Springer International Publishing.
6. Koh, Jae Myong. 2018. Green Infrastructure Financing. Cham: Springer International Publishing.
7. Nakamura, F. red. 2022. Green Infrastructure and Climate Change Adaptation: Function, Implementation and Governance. Singapore: Springer Nature Singapore.
8. Pearlmutter, D., Calfapietra C, Roeland Samson, O'Brien, L., Krajter Ostoić, S., Sanesi, G., i Del Amo, R. A. red. 2017. The Urban Forest: Cultivating Green Infrastructure for People and the Environment. Cham: Springer International Publishing.

Supplementary literature:

1. Legutko-Kobus, P., Szulczewska, B., Gawryszewska, B., Długozima, A., Giedych, R., & Nowak, M. J. 2025. Barriers in the green infrastructure governance in small and medium-sized cities in Poland. Economics and Environment, 91, Article 4.
2. Giedych, R., Maksymiuk, G., & Cieszewska, A. 2024. Eco-Spatial Indices as an Effective Tool for Climate Change Adaptation in Residential Neighbourhoods—Comparative Study. Land, 13, Article 9.
3. Szulczewska B., Giedych R., Maksymiuk G. 2017. Can we face the challenge: how to implement a theoretical concept of green infrastructure into planning practice? Landscape Research, 42 (2): 176–194
4. Szulczewska B., Giedych R., Dobson S., Doygun H., Halounova L., Nurlu E., Pirowski A. 2014. Planning measures for ecosystem based adaptation capacity of cities: a comparative study. In: Dawson R.J., Wykmans A., Heinrich O., Kohler J., Dobson S., Feliu E. (eds.) Understanding Cities: Advances in integrated assessment of urban sustainability, Centre for Earth Systems Engineering Research (CESER), New Castle: 110-130

Comments:

Estimated number of hours of work of the doctoral student necessary to achieve the assumed learning outcomes:

Learning outcomes reference to the second degree characteristics of the National Qualification Framework (level 8) covering doctoral competences:

Symbol:	Learning outcomes:	8 level NQF
SD1_KW01	To the extent enabling to revise the existing paradigms in the field/discipline - the world achievements, gathering theoretical background as well as general and selected detailed issues	P8S_WG
SD1_KW02	Major general development trends in the field/discipline	P8S_WG
SD1_KU05	Carry out critical assessment of the scientific research findings and expert activities and their contribution to the knowledge development in the field/discipline	P8S_UW
SD1_KK01	Critically evaluate the achievements in the field/discipline represented	P8S_KK
SD1_KK03	Recognise knowledge in solving cognitive and practical problems characteristic for the area of research (field/discipline) and in an interdisciplinary aspect	P8S_KK
SD1_KK08	Support the ethos of scientific circles and conduct independent research	P8S_KR