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| Course title: | Green Infrastructure Development |
| Course title in Polish: | Kształtowanie zielonej infrastruktury |
| Course for discipline: | Environmental Engineering, Mining and Energy |

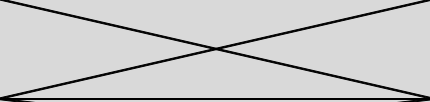


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| Semester: | 5 | Status of course: | faculty | Language: | english |
| Academic year: | | Catalog number: | | | |

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

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| Assumptions, goals and description of the course: | <p>Assumptions: This course adopts a multidimensional approach to green infrastructure, integrating ecological, spatial, and technical perspectives. It emphasizes a critical examination of its theoretical foundations, development trends, and diverse interpretations within planning and environmental management. The course presents green infrastructure as a systemic approach that organizes the relationships between natural processes and human activities in the built environment.</p> <p>Goals: The course aims to deepen students' understanding of green infrastructure as a strategic response to urbanization pressures, climate change, and the need to enhance environmental quality. Students will explore the factors influencing successful implementation, as well as the role of public policies, regulations, and planning instruments in creating coherent natural systems. The course also highlights the potential of green infrastructure to align environmental initiatives with socio-economic development.</p> <p>Course Description: The course is analytical and problem-focused, drawing on in-depth literature review and critical analysis of selected case studies. It examines the functions, objectives, and guiding principles of green infrastructure, alongside the legal and managerial tools used to implement it. Particular emphasis is placed on practical application, including the institutional, planning, and organizational mechanisms that enable effective deployment across different spatial scales.</p> |
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| Didactic form, number of hours: | 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: |
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| 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 and analogue 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:

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| Estimated number of hours of work of the doctoral student necessary to achieve the assumed learning outcomes: | 25 |
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| Learning outcomes reference to the second degree characteristics of the National Qualification Framework (level 8) covering doctoral competences: | | |
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| 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 |