Erasmus+ Programme
Action 2: KA220-HED - Cooperation partnerships in higher education
Project: GREEN & SUSTAINABLE PUBLIC SPACES IN HISTORIC CITIES - INNOVATIVE TEACHING PROGRAMME
Contract No. 2023-1-PL01-KA220-HED-00015321

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Module (subject) syllabus
Field of study: Architecture
Second cycle studies

Item:	Adapting Historic Public Spaces to Climate Change
Item type:	-
Item code:	-
Year:	I
Term:	III
Form of studies:	Stationary
Type of classes and number of hours per semester:	30
Lecture	-
Exercises	30
Laboratory	-
Design	-
Number of ECTS points:	2
How to pass:	Preparation of a *Charter for the modernization* of a selected public space in a historic city, including its analysis, evaluation and adaptation.
Language of instruction:	English

Subject Objectives	
C1	• To provide the student with knowledge in the field of shaping historical public spaces in the context of adaptation to climate change, including the use of necessary knowledge in the field of introducing blue-green infrastructure and green urbanism.

	• Obtaining basic knowledge in the field of protection and conservation of historic public spaces in order to protect their authenticity and integrity. • Gaining student knowledge in the field of inventory and modernization of public spaces in historic cities and actions leading to mitigation of the consequences of climate change by proposing individual design solutions
C2	• Students acquire the ability to critically analyze and evaluate historical public spaces based on the methodology included in the Charter for the Modernization of Public Spaces in Historic Cities, taking into account the criteria of accessibility, functionality, ecology and technical requirements. • Students acquire the ability to abstract historical elements of public space that build the identity of a place in order to protect and preserve them.

Prerequisites in terms of knowledge, skills and other competencies	
1	Possessing computer skills and necessary software
2	Possessing knowledge and skills in the design of public spaces and the principles of preparing technical drawing documentation
3	Possessing knowledge of the basics of art history, landscape architecture, architectural design, conservation design and materials science

Learning outcomes	
	In terms of knowledge:
EK 1	• Knows the threats to historic public spaces resulting from climate change, is able to characterize them and knows what are the possible solutions using solutions based on NBS and introducing green infrastructure into the space of a traditional city. • Knows and understands that the public space of a historic city requires protection and conservation. Knows what elements should be protected and preserved in order to preserve the identity of the place. Can identify them. • Understands that heritage protection is a means of contributing to the sustainable development of the city and enabling its modernisation in harmony with social, urban and environmental conditions. • Knows and understands the basic knowledge contained in the Charter for the Modernisation of Public Spaces in Historic Cities.
EC 2	• Knows and understands the methodology for analysing public spaces in a historic city in order to develop an assessment of individual public spaces and their modernisation based on the criteria of accessibility, functionality, ecology and technical requirements • Knows and understands the need to protect individual elements of historic public space in order to protect the urban heritage. Knows and understands the relationships between the elements that build historic public space.
	In terms of skills:
EC 3	• Is able to apply the Public Space Modernization Charter in practice. On its basis, is able to evaluate this space and formulate guidelines regarding functionality, accessibility, ecology and maintenance. • Is able to identify elements of historical public space that build *genius loci* places. Is able to evaluate them and formulate guidelines for their protection and conservation.

	• Is able to identify the widest possible spectrum of material and non-material values that constitute the characteristics of the analyzed space • Is able to translate developed guidelines into design solutions.
	In terms of social competences:
EC 4	He is ready to make a reliable self-assessment and formulate constructive criticism regarding architectural and urban planning activities.

Subject curriculum content	
Form of classes – laboratories	
	Program content
L1	• Familiarization with the issues of adapting historic public spaces to climate change. • Familiarisation with specific problems affecting public spaces in the context of climate change, including: -urban meteorological hazards (heavy precipitation, extreme temperatures); -climatological (water shortages, fires), -biological (development of dangerous microorganisms) and ways of counteracting through the introduction • Familiarization with the principles of green urbanism - (use of solutions for collecting rainwater, location of various forms of greenery accompanying communication systems as well as rainwater retention facilities and slowing down surface runoff, use of solutions protecting infrastructure against extreme weather phenomena, systemic approach to creating elements of green and blue infrastructure, appropriate care of green infrastructure before and during dry periods, creation of protection systems for existing and creation of new elements of blue infrastructure) • Detailed discussion of green infrastructure and NBS-based solutions (issues of facade and roof greenery, vertical gardens, protection of existing greenery, rain gardens, pocket gardens, parcelling, architectural adaptation, permeable surfaces, water retention, rainfall management, etc.). • Familiarization with the issues of urban heritage protection, including the perception of heritage based on a holistic, integrated and value-based approach • Familiarization with the characteristics of public spaces in historic cities and forms of their protection. Standards and requirements for shaping public spaces. Criteria: accessibility, functionality, ecology and technical requirements
L2	• Familiarization with elements of historical public spaces: elements permanently connected with the ground, urban furniture, greenery in public spaces. Characterization of these elements with particular emphasis on elements that build the identity of historical public spaces. • Using the online course in the form of MOOC. The MOOC will provide students with an extension of their knowledge on climate change mitigation in historic public spaces. The MOOC is divided into three thematic areas that overlap with the Charter and the handbook.
L3	Familiarization with the Charter for the Modernization of Public Spaces in Historic Cities as a tool facilitating the formulation of guidelines for the design of individual public spaces in the context of their adaptation to climate change.
L4	Preparation of a Modernization Charter for a selected historic public space. adjustment

L5	• Assessment and development of guidelines (accessibility, functionality, ecological and material) for selected public spaces based on the methodology used in the Public Space Modernisation Charter • Evaluation and development of guidelines for historic elements that build the identity of a place. • Public presentation followed by academic discussion
L6	Implementation of the developed guidelines in conceptual projects for the modernization of selected historic public spaces along with adaptation to climate change.
L7	Presentation and defense of the developed Charter for the modernization of a selected public space.

Teaching methods	
1	Exercises
2	Demonstration, Massive Online Open Course MOOC
3	On-site inspection

Evaluation methods and criteria		
Evaluation Method Symbol	**Description of the evaluation method**	**Passing threshold**
O1	Assessment of the degree of advancement and correctness of the implementation of the Public Space Modernization Card (correction)	51%
O2	Correctness of the evaluation of public space and the development of conclusions and their implementation in the conceptual design in the form of an annex	51%

Basic literature	
1	Gehl J., *Life Between Buildings. The Use of Public Spaces.* Transl. Marta A. Urbańska. Kraków: RAM Publishing House, 2013.
2	Lynch K., *Good City Form*, 1981
3	Kostof , Spiro, *The City Shaped: Urban Patterns and Meanings Through History.* New York, Bulfinch Press, 2014
4	Cohen- Shacham , E., Walters, G., C. Janzen, Maginnis , Editors: *Nature-based Solutions to address global societal challenges. International Union for Conservation of Nature (IUCN).* Gland, Switzerland, 2016
5	*Urban heritage for resilience: consolidated results of the implementation of the 2011 Recommendation on the Historic Urban Landscape; 3rd Member States Consultation* Corporate author: UNESCO [8224]DOI: https://doi.org/10.58337/CFZO9650
6	European Commission *EU Policy on the Urban Environment,* https://ec.europa.eu/environment/urban/egc.htm , 2012
7	European Commission, *Copenhagen, Green cities fit for life,* http://ec.europa.eu/environment/europeangreencapital/winning-cities/2014-copenhagen/ , 2014
8	European Commission, *Paris Agreement,* https://ec.europa.eu/clima/policies/international/negotiations/paris_pl ., 2016
9	European Commission, *Will your city be the European Green Capital in 2018?,*

	http://ec.europa.eu/environment/europeangreencapital/wp-content/uploads/2013/02/ENV-15-007- factsheet-PL-web.pdf., 2016
10	European Commission, *European Green Deal, Aspiring to be the first climate-neutral continent,* https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_pl , 2019
11	Kundzewicz ZW, Kowalczak P., *Climate changes and their effects* . Kurpisz Publishing House, Poznań, 2008
12	Szczepanowska H., *Good practices in the development of urban space with green infrastructure, especially trees.* [In:] A. Kalinowska (ed.), *Ideal city. Sustainable city. Spatial planning of urban areas and its impact on reducing the effects of climate change,* University Center for Research on the Natural Environment and Sustainable Development, Warsaw, 2015
13	Szulczewska B., *Green infrastructure of the city* . [In:] A. Kalinowska (ed.), *Ideal city. Sustainable city. Spatial planning of urban areas and its impact on reducing the effects of climate change,* University Center for Research on the Natural Environment and Sustainable Development, Warsaw, 2015
14	Iwaszuk E., Rudik G., Duin L., Mederake L., McKenna D., Naumann S. (Ecologic Institute); Iwona Wagner (FPP Enviro) *Blue-green infrastructure for climate change mitigation – technical catalogue,* Ecologic Institute and Sendzimir Foundation, 2019
15	Info-roofs, *Green roof or garden above your head, How much does a green roof cost?* Construction Expert.https://zbudujmydom.pl/artykul/ile-kosztuje-zielony-dach, 2016
16	Wilmers, *Effects of vegetation on urban climate and buildings Energy and Buildings* , 15 1990,
17	Guidelines of the General Conservator of Monuments Development of market spaces DOZ.6521.26.2019 https://www.gov.pl/web/kultura/wytyczne-generalny-konserwatora-zabytkow
18	Guidelines of the General Conservator of Monuments Development of historical monument systems and protection of greenery DOZ-KiNK.6521.15.2021 https://www.gov.pl/web/kultura/wytyczne-generalny-konserwatora-zabytkow
Additional literature	
1	Hoblyk A: *Transformation of urban space, tasks and methods of study,* Space and Form, 2013
2	*Technical Report, Future Cities and New Economy, Carbon Neutrality Driven by Green Innovations,* 2023
3	*Nature-Based Solutions Accelerating Urban Sustainability Transitions in Cities: Lessons from Dresden, Genk and Stockholm Cities,*
4	*Toolkits, Manuals and Guides, Public Space Site-Specific Assessment: Guidelines to Achieve Quality Public Spaces at Neighborhood Level*
5	Iveson K., *Putting the public back into public space,* "Urban Policy and Research", 16, 1998
6	Manual for didactics: *Sustainable & green public spaces in historic cites* elaborated in the project.
7	Bolund P. , Hunhammar S., *Ecosystem services in urban areas,* Ecological Economics, Volume 29, Issue 2, PP. 293-301, 1999
8	Bernatzky, *The effects of trees on the urban climate Trees in the 21st Century,* Academic Publishers, Berkhamster (1983), pp. 59-76, 1983
9	Moll G., Ebenreck S.(Eds.), *Shading Our Cities* , Island Press, Washington, DC

	pp. 329, 1989
10	Giovini B, *Impact of planted areas on urban environmental quality:* Review Atmos . Environ ., 25B (3), pp. 289-299, 1991
11	Aram F., García E., Solgi E., Mansournia S., *Urban green space cooling effect in cities* Heliyon , 5 (4), Article e01339, 2019
12	Blachowski J., Hajnrych M., *Assessing the cooling effect of four urban parks of different sizes in a temperate continental climate zone: Wroclaw (Poland)* Forests , 12 (8), p. 1136, 10.3390/f12081136, 2021
13	Cao S., Wang Y, Ni Z., Xia B., *Effects of blue-green infrastructures on the microclimate in an urban residential area under hot weather,* Frontiers in Sustainable Cities, 4, Article 824779, 10.3389/frsc.2022.824779, 2022
14	Cheng X., Wei B., Chen G., Li J., Song C., *Influence of park size and its surrounding urban landscape patterns on the park cooling effect,* Journal of Urban Planning and Development, pp.141. 2014,
15	Ghosh S., Das A., *Modeling urban cooling island impact of green space and water bodies on surface urban heat island in a continuously developing urban area,* Modeling Earth Systems and Environment, 4, pp. 501-515, 2018
16	Gunawardena K., Wells M., Kershaw T., *Utilizing green and bluespace to mitigate urban heat island intensity ,* Science of the Total Environment, 584-585, , pp. 1040-1055, 2017
17	P. Kumar, S. E. Debele, S. Khalili, C. H. Halios, J. Sahani, N. Aghamohammadi, ..., L. Jones Urban heat mitigation by green and blue infrastructure: Drivers, effectiveness, and future needs The Innovation, 5 (2) (2024)
18	Norton B., Coutts A., Livesley S., Harris R., Hunter A., Williams N. *Planning for cooler cities: A framework to prioritize green infrastructure to mitigate high temperatures in urban landscapes Landscape and Urban Planning,* 134, , pp. 127-138, 10.1016/j.landurbplan.2014.10.018, 2015
19	Park C., Lee D., Asawa T., Murakami A., Kim H., *Influence of urban form on the cooling effect of a small urban river* , Landscape and Urban Planning, 183, pp. 26-35, 10.1016/j.landurbplan.2018.10.022, 2019
20	Scholz T., Hof A., Schmitt T. , *Cooling effects and regulating ecosystem services provided by urban trees—Novel analysis approaches using urban tree cadastre data* , Sustainability, 10 (3), p. 712, 10.3390/su10030712, 2018
21	Sun R., Chen L., *Landscape and urban planning how can urban water bodies be designed for climate adaptation?* Landscape and Urban Planning, 105, pp. 27-33, 10.1016/j.landurbplan.2011.11.018, 2012
22	Wu C., Li J., Wang C., Song C., Chen Y., Finka M., La Rosa D. *Understanding the relationship between urban blue infrastructure and land surface temperature* , The Science of the Total Environment, 694, 10.1016/j.scitotenv.2019.133742, 2019
23	Brodowicz , DP, *Final report of the study "Green strategies in cities in Poland - a comparative study of Warsaw, Krakow and Poznan* " as part of the research of young scientists at the Warsaw School of Economics, 2015-2016
24	UN Habitat, *State of the World's Cities Series, Prosperity of Cities:* 2012/2013, Routledge, 2013, p. xi
25	Janik L.- *Problems of Urban Development,* 2021 - bazekon.icm.edu.pl, Polish cities on the path to adaptation to climate change - examples of Wrocław and Radom , 2021

Student workload

Form of activity	Average number of hours to complete an activity
Contact hours with lecturer, including:	**30**
Participation in exercises	30
Student's own work, including:	**20**
Preparation for classes	5
Making the card and drawings yourself	15
Total student work time	**50**
Total number of ECTS points for the course	**2**

Learning Outcomes Matrix					
Subject Learning Outcome Symbol	**Relating the subject learning outcome to the outcomes defined for the field of study, together with specifying the degree of connection**	**Subject Objectives**	**Program content**	**Teaching methods**	**Evaluation methods**
EK 1	A1A_W14 ++	C1, C2	L1, L2, L3, L4, L5, L6, L7	1, 2	O1, O2
EC 2	A1A_W04 +++	C1, C2	L1, L2, L3, L4, L5, L6, L7	1, 2	O1, O2
EK 3	A1A_U02 + A1A_U09 ++ A1A_U21 + A1A_U26 +++	C1, C2	L1, L2, L3, L4, L5, L6, L7	1, 2, 3	O1, O2
EC 4	A1A_K07 ++	C1	L1	1, 2	O1, O2

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