



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Water in Architecture

Course

Field of study

Architecture

Area of study (specialization)

-

Level of study

Second-cycle studies

Form of study

full-time

Year/Semester

I/2

Profile of study

general academic

Course offered in

polish/english

Requirements

elective

Number of hours

Lecture

15

Laboratory classes

0

Other (e.g. online)

Tutorials

0

Projects/seminars

0

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

dr hab. inż. arch. Anna Januchta-Szostak, prof.

PP

Responsible for the course/lecturer:

e-mail: anna.januchta-szostak@put.poznan.pl

Prerequisites

1. Knowledge:

student has explicit, theoretically based knowledge including the key issues of architecture and urban planning as well as landscape architecture,

student has knowledge required for the understanding of social, economic, legal and other determinants outside the engineering field of architectural designing and urban planning,

2. Skills:

student can acquire information from field specific literature, data bases and other properly selected sources in Polish and English, can integrate the acquired information, interpret the said information, as well as draw conclusions and come up with opinions supported with satisfactory reason,

3. Social Competences:



student understands the need for lifelong learning,

is aware of the social role of the architect and liability for affecting decisions.

Course objective

Obtaining extended knowledge in the field of sustainable planning and design considering the role of water in architecture and urban planning in aesthetic, functional, economic, environmental and administrative-legal aspects.

Broadening knowledge of the latest tendencies in the field of pro-ecological design and the links between spatial planning and water management (water-sensitive planning & design, rainwater / stormwater management, SUDS - sustainable urban drainage systems etc.).

Getting information about the basic instruments and tools of water-sensitive, climate-resilient and pro-ecological design.

Understanding the methods of implementing sustainable rainwater management systems, and river restoration technics in urbanized areas.

Obtaining theoretical knowledge necessary to develop a research project in the summer semester (research laboratory).

Course-related learning outcomes

Knowledge

A.W5. principles of universal design, including the idea of designing spaces and buildings accessible to all users, in particular for people with disabilities, in architecture, urban planning and spatial planning, and ergonomic principles, including ergonomic parameters

A.W8. the interdisciplinary nature of architectural and urban design and the need to integrate knowledge from other fields, as well as its application in the design process in cooperation with specialists in these fields

Skills

A.U9. integrate information obtained from various sources, formulate their interpretation and critical, detailed analysis and draw conclusions from them, as well as formulate and justify opinions and demonstrate their relationship with the design process, based on

Social competences

A.S4. take responsibility for shaping the natural environment and cultural landscape, including the preservation of the heritage of the region, country and Europe.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

completion of the course is associated with active participation in lectures and passing the final test, which includes the content presented at the lectures.

Programme content



1. Introduction. Water in the history of urban development. Discussion of the objectives and schedule of lectures and the conditions for passing the course. An outline of historical changes in the relationship between the city and the river in the periods of Respect, Conquest and Return, as well as the ecohydrographic consequences of urbanization. Challenges and needs of integrating water management and spatial development in cities.
2. Urban Waterfronts. Waterfronts - redefinition of the concept. The process of transformation of waterfronts - development and degradation of urban waterside areas. The river - the city's showpiece - the specificity and functions of urban rivers. Examples of revitalization of urban waterfronts: Rotterdam, Amsterdam, Hamburg, New York, Barcelona. 10 principles of revitalization of water fronts. Resilient city - examples of solutions for flood protection and amphibious architecture.
3. Regeneration of river valleys. Riverside buffer parks. The role of the river valley in the functional and spatial structure of the city - the interface between the natural and cultural environment. Causes and effects of the degradation of urban watercourses. Goals, methods and good practices of urban and natural revitalization of urban riverside areas. Riverside buffer parks.
4. Risks related to water in the context of climate change. The influence of cities on climate and climate on the city. Basics, methodology and importance of climate adaptation plans in urban development. Threats: weather extremes, droughts, floods, pollution in the light of legal acts: Water Framework Directive, Floods Directive, Water Law. Types of floods and reasons for the increase in flood hazards: hydro-meteorological and anthropogenic (effects of urbanization processes and catchment transformations). Methods of flood protection and flood risk management. Settlement in coexistence with water - the catchment approach in urban planning.
5. Sustainable rainwater management - SUDS systems / TRIO catalog. Traditional sewage and drainage systems and environmentally friendly rainwater drainage and management systems in cities. Problems and goals of sustainable rainwater management. World trends in pro-ecological design and connections between spatial planning and water management (water-sensitive planning & design, rainwater / stormwater management, SUDS - sustainable urban drainage systems etc.). A catalog of TRIO systems for transport, retention, infiltration and treatment of rainwater. Case study. The role of blue - green infrastructure (BZI) in shaping the structure of cities, water management and adaptation to climate change. Examples of the use of nature-based solutions (NBS).
6. The role of water in architectural composition and shaping public space. Water in architecture - problems and advantages. Water problems and water advantages on a city, place, building scale. Perceptual and behavioral potential of water in urban composition. Scale of water perception of landscape interior elements and compositional effects. Typology of water elements - analysis of symbolism, visual, emotional and behavioral values. Rain squares - design and evaluation methods.

Teaching methods

1. Lecture with multimedia presentation
2. eLearning Moodle (a system supporting the teaching process and distance learning)



Bibliography

Basic

Dreiseitl H., Grau D., Ludwig K.H.C., *Waterscapes. Planning, Building and Designing with Water*, Birkhäuser, Basel-Berlin-Boston 2001.

Bergier T., Kronenberg J., Wagner I., (red.), *Water in the City. Sustainable Development Applications Series 5/2015*. Publisher: Fundacja Sendzimir, Kraków 2014, Download PDF:
<http://www.sendzimir.org.pl/en/series5>

Baker R., Coutts R., *Aquatecture: Buildings Designed to Live and Work with Water*, RIBA 2016

Januchta-Szostak A., *River-friendly cities*. Peter Lang, Berlin, Bern, Bruxelles, New York, Oxford, Warszawa, Wien, 2020.

Januchta-Szostak A., *Poznań Waterfront – Warta Valley. Revitalisation of the relationship with the river*, Wyd. Politechniki Poznańskiej, Poznań 2011

Januchta-Szostak A. (red.), *Sensitive approach to water in urban environment, series: Woda w krajobrazie miasta /Water in the Townscape, volume 4*, Wyd. Politechniki Poznańskiej, Poznań 2011

Januchta-Szostak A. (red.), *Water in the Townscape, Tom 1-2/2009*, Wyd. Politechniki Poznańskiej, Poznań 2009

Moore Ch., *Water and Architecture*, Thames & Hudson, New York 1994

Wylson A., *Aquatecture: Architecture and Water*, Architectural Press, 2013, fragments:
<https://books.google.pl/>

Water Directives EU

Additional

Boer F., Jorritsma J., van Peijpe D., *De urbanisten en het wondere waterplein*. Uitgeverij 010, Rotterdam 2010.

Breen A., Rigby D., 1994, *Waterfronts. Cities Reclaim Their Edge*. Thames and Hudson, London.

Bruttomesso R. (red.), 1993, *Waterfronts. A New Frontier for Cities on Water*, Centro Internazionale „Citta D’Acqua”, Venice.

Bruttomesso R. (red.), 1999, *Water and Industrial Heritage*, Marsilio Editori, Venice,.

Bruttomesso R., 2011, *Complexity on the urban waterfront. Waterfronts in Post-industrial Cities*. Spon Press. Londyn.

Januchta-Szostak A., 2011, *Poznań Waterfront – Warta Valley. Revitalisation of the relationship with the river*, Wyd. Politechniki Poznańskiej, Poznań.



Januchta-Szostak A. (red.), 2009, 2011, Water in the Townscape, Tom 1-2/2009, tom 3-4/ 2011, Wyd. Politechniki Poznańskiej, Poznań.

Lorens P. , 2007, Young City in Gdańsk as the Case in Urban Waterfront Redevelopment (in:) Water for Urban Strategies, red. L Nyka, Verlag der Bauhaus-Universität Weimar.

Marshall R. (red.) [2001], Waterfronts in Post-Industrial Cities, Taylor & Francis, Spons Press, London–New York.

Meyer H., 1999, City and Port, International Books, Rotterdam.

Moore Ch., 1994, Water and Architecture, Thames & Hudson, New York.

Nyka L. (ed.), 2007, Water for Urban Strategies, Verlag der Bauhaus-Universität, Weimar.

Pötz H., Bleuzé P., Urban green-blue grids for sustainable and dynamic cities. Coop For Life, Delft 2012.

Rivers by Design. Rethinking development and river restoration. A guide for planners, developers, architects and landscape architects on maximising the benefits of river restoration, Partners of the Restore Project 2013, Restoring Europe’s Rivers, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/297315/LIT8146_7024a9.pdf

Riverscapes. Designing Urban Embankments [2008], red. Ch. Hölzer, T. Hundt, C. Lüke, O.G. Hamm, Montag Stiftung Urbane Räume, Birkhäuser, Basel–Boston–Berlin.

Urban Rivers - Vital Spaces. Manual for urban river revitalisation - implementation, participation, benefits REURIS Project Team, 31 January 2012, www.reuris.gig.eu

SUDS – Sustainable Urban Drainage Systems. CIRIA, www.ciria.org/suds

URBEM - Urban River Basin Enhancement Methods - Existing Urban River Rehabilitation Schemes (Work package 2) Final Report, funded by European Commission, 5 th Framework Programme, Key Action 4 “City of tomorrow and cultural heritage“, June 2004, http://www.urbem.net/WP2/WP2_case_studies.pdf

Breakdown of average student's workload

	Hours	ECTS
Total workload	35	2,0
Classes requiring direct contact with the teacher	15	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam) ¹	20	1,0

¹ delete or add other activities as appropriate