

<p>and renaturalisation of river valleys on the urbanized areas.</p> <ul style="list-style-type: none"> Preparation to the scientific researches. Gaining the theoretical knowledge required for development of research project in the framework of the course: Research-project design studio B. 		
Learning outcomes		
Knowledge:		
number (symbol)	Having completed the course, student can:	Reference to the outcomes of the learning process in the area of technical sciences
W01	has theoretically based knowledge and detailed knowledge of selected issues of the architecture and urban planning and landscape architecture, especially related to threats and advantages of water in designing the architectural facilities and settlement structures	AU2_W01
W02	has knowledge of development trends and most important achievements in design, architectural designing and urban planning, especially in the scope of ecological architecture in Poland, Europe and in the world (water-sensitive planning & design)	AU2_W02
W03	student has knowledge required for the understanding of social, economic, legal and other determinants outside the engineering field of engineering activities and has basic knowledge related to quality management, including sustainable development management of cities	AU1_W03
W04	has detailed knowledge related to selected issues in the scope of architectural designing and urban planning and can use the knowledge in the scope of fields of study connected with field of study being studied (in the case of the course of Water in architecture: hydrology, hydraulic engineering and environmental engineering)	AU2_W12
Skills:		
number (symbol)	Having completed the course, student can:	Reference to the outcomes of the learning process in the area of technical sciences
U01	can acquire information from field specific literature, data bases and other properly selected sources in Polish and English, can integrate the acquired information, interpret and critically assess the said information, as well as draw conclusions and come up with opinions supported with satisfactory reasons	AU2_U01
U02	can specify the directions of further education and can undertake the self-education process	AU2_U03
U03	can assess the usefulness and possibility of using the new achievements in the scope of architecture and urban planning as well as related fields	AU2_U06
Social competences:		
number (symbol)	Having completed the course, student can:	Reference to the outcomes of the learning process in the area of technical sciences

K01	student understands the need of continuous self-education, improvement of professional, personal and social competences	AU2_K04
K03	is aware of the importance of non-technical aspects and effects of engineering activities, in this impact upon the environment and liability for environment affecting decisions	AU2_K05
Methods of check the learning outcomes		
A series of lectures of the course: Research-project design studio A: Water in Architecture is a theoretical basis to implementation of research project in the framework of the course: Research-project design studio . Lectures end with independent credit. There are proposed two terms of credit, but the second is resit term.		
Forming evaluation: active participation in lectures, what is confirmed attendance at 3 from 7/8 lectures. Final grading scale: 2,0; 3,0; 3,5; 4,0; 4,5; 5,0		
Summary score: Assessment for preparation of short research elaboration or assessment of colloquium covering the lectures contents. Final grading scale: 3,0; 3,5; 4,0; 4,5; 5,0		
Course contents		
<ol style="list-style-type: none"> 1. Water in architecture – problems and advantages. Perception of role of water in the city. Aquatic Culture. Problems related to water and advantages of water in the scale of city, place, building. 2. The role of water in architectural composition. Perceptual and behavioral potential of water. Scale of water elements perception. Typology of water elements in two-dimensional, three-dimensional and four-dimensional composition. Water as a medium of beauty and essence in the landscape – analysis of symbolism, visual, emotional and behavioral values. 3. Waterfronts in the urbanized landscape. Waterfronts – redefinition of concept. Transformation of waterfronts – development and degradation of urban aquatic areas. River – city visiting-card – specifics and functions of urban aquatic areas. 10 principles of waterfronts revitalization. Examples of urban waterfronts revitalization. Rotterdam, Amsterdam, Hamburg, New York, Barcelona. 4. Activation and revitalization of river valleys in the cities. The role of river valley in functional and spatial structure of city – point of contact of natural and cultural environment – holistic approach. Causes and effects of degradation of urban water-courses. Goals, methods and good practices of urban and natural revitalization of urban riverside areas. Riverside buffer parks. 5. Threats related to water as against processes of urbanization and global climatic changes in the light of EU directives and water legislation. Global changes of climate and their impact on destabilization of water economy. Types of floods and reasons for the increase of flood risks: hydro-meteorological and anthropogenic (effects of urbanization processes and transformations of drainage areas). Flood protection methods in Europe. Management of river valleys and integrated management of flood risk in the light of legislation: Water Framework Directive, Floods Directive, Water Legislation. Colonization in coexistence with water – drainage areas approach in urban planning, case study. 6. Rain in the city 1 - sustainable rainwater/stormwater management SUDS systems / TRIO catalog. Traditional systems of storm-water drainage and ecological systems of rainwater drainage management in the cities. Problems and aims of sustainable rainwater management. World tendencies in the scope of ecological design and connections between spatial planning and water economy (water-sensitive planning & design, rainwater/stormwater management, SUDS - sustainable urban drainage systems etc.). Catalog of forms of TRIO systems serving to transportation, retention, infiltration and rainwater purification. 7. Rain in the city 2 - sustainable rainwater/stormwater management – case study. Analysis of examples of SUDS application in Scharnhäuser Park in Ostfildern, Arkadien Asperg near Stuttgart, Kronsberg – Hannover, Potsdamer Platz in Berlin, Mokotów Marina in Warsaw, Portland in Oregon state and others. 		

8. The water role in formation of public space – examples of integrated approach to designing. Discussion of research aims, methods and tools serving to integrated designing of urbanized areas. Introduction to development of research project in spring semester.

Basic bibliography:

- Dyrektywa 2000/60/EC Parlamentu Europejskiego i Rady z dnia 23 października 2000 r. w sprawie ustanowienia ram dla działalności Wspólnoty w dziedzinie polityki wodnej (tzw. *Ramowa Dyrektywa Wodna – RDW*)
- Dyrektywa 2007/60/WE Parlamentu Europejskiego i Rady z dnia 23 października 2007 r. w sprawie oceny ryzyka powodzi i zarządzania nim (tzw. *Dyrektywa Powodziowa*)
- Dreiseitl H., Grau D., Ludwig K.H.C., *Waterscapes. Planning, Building and Designing with Water*, Birkhäuser, Basel-Berlin-Boston 2001.
- Januchta-Szostak A., *Woda w miejskiej przestrzeni publicznej. Modelowe formy zagospodarowania wód opadowych i powierzchniowych*, seria: Rozprawy nr 454, Wyd. Politechniki Poznańskiej, Poznań 2011.
- Januchta-Szostak A., *Front wodny Poznania - Dolina Warty. Rewitalizacja związków z rzeką / Poznań Waterfront – Warta Valley. Revitalisation of the relationship with the river*, Wyd. Politechniki Poznańskiej, Poznań 2011.
- Niemczyk E., *Cztery żywioły w architekturze*, Ossolineum, Wrocław 2002.
- Ustawa z dnia 18 lipca 2001 r. Prawo wodne (Dz.U. z 2005 r. nr 239 poz. 2019 z późn. zm.)
- Wylson A., *Aquatecture. Architecture and Water*, Van Nostrand Reinhold, New York 1986.

Complementary bibliography:

- Geiger W., Dreiseitl H., *Nowe sposoby odprowadzania wód deszczowych*, Oficyna Wydawnicza Projprzem-Eko, Bydgoszcz 1999.
- Januchta-Szostak A., *Usługi ekosystemów wodnych w miastach*, (w:) T. Bergier, J. Kronenberg (red.) *Zrównoważony Rozwój — Zastosowania. Tom 3. Przyroda w mieście*. Wyd. Fundacja Sendzimir, Kraków 2012, s. 91-110, www.sendzimir.org.pl; http://sendzimir.org.pl/images/Zrównoważony_Rozwój_Zastosowania-3.pdf
- Kaniecki A., *Poznań. Dzieje miasta wodą pisane*, Wyd. PTPN, Poznań 2004.
- Kołtuniak J. (red.), *Rzeki. Kultura, cywilizacja, historia*, t. 1-10, wyd. Śląsk, Katowice 1992-2002.
- Kowalczak P., *Wodne dylematy urbanizacji*, Wyd. Poznańskie, Poznań 2010.
- Moore Ch., *Water and Architecture*, Thames & Hudson, New York 1994.
- SUDS – *Sustainable Urban Drainage Systems*. CIRIA, www.ciria.org/suds
- *Woda w krajobrazie miasta / Water in the Townscape*, Januchta-Szostak A. (red.), Tom 1-2/2009, tom 3-4/ 2011, Wyd. Politechniki Poznańskiej, Poznań 2009, 2011.

The workload of student

Form of activity	Hours	ECTS
Total workload	28	1
Activities that require individual contact with the teacher	1	0
Activities of practical	0	0

Balance the workload of the average student

Form of activity	Number of hours
participation in lectures	15 h
participation in classes/ laboratory classes (projects)	0
preparation for classes/ laboratory classes	0
preparation to colloquium/final review	12 h

participation in consultation related to realization of learning process	1 h
preparation to the exam	0 h
attendance at exam	0 h

Total workload of student:

1 ECTS credit

28 h

As part of this specified student workload:

activities that require direct participation of teachers:

15 h + 1 h = 16 h

1 ECTS credit