Syllabus

02922-10-Br/117

ECTS: 5

WATER IN NATURAL AND CULTURAL LANDSCAPE

WODA W KRAJOBRAZIE NATURALNYM I KULTUROWYM

CONTENTS OF LECTURES


CONTENTS OF CLASSES

Hydrographic map and other sources of hydrological data. Hydrographic catchment parameters. Hydrography and hierarchy of a river network. Characteristics of a chosen river system. Base of location of hydrotechnical objects. Hydro-morphological assessment of a stream channel section (outdoor classes), including an assessment of the degree of naturalness of the stream channel. Hydrological measurements of surface and groundwater. The design of bank zone of a reservoir or a river for the recreational or economical purposes.

PRINCIPLES AND OBJECTIVES OF THE COURSE AS THE EFFECTS OF TEACHING:

Knowledge

Student is conscious of the importance of water for human life. She/he should define and characterize the factors influencing fluvial landscapes based on the hydrological and geomorphological knowledge. Student should characterize functions of water in the natural and cultural landscapes. She/he should be able to comprehend the relationship between water features and landscape architecture. Student should possess ability to assess water-related changes in the landscape. Student should understand the vitality of water features for nature protection, recreation and aesthetics. Student should explain causes of aquatic ecosystems degradation and indicate methods of the landscape restoration.

Skills

After the course completed, a student should be able to find relevant sources of hydrological information, and know how to interpret the hydrological data-set. She/he should fluently use empirical equations, measurement methods, especially when the parameters of hydrological structures are needed. Student is prepared to recognize extremal hydrological phenomena. Student should use the empirical knowledge in practice. She/he should assess the degree of naturalness of a stream channel. Should be creative in solving restoration problems, should design and present her/his ideas. She/he should be able to follow new developments and literature in the using water features.

Competence/Attitudes

Student should use the achieved knowledge in creation of her/his own design ideas within the area of landscape architecture. Student should understand to stay up-to-date with contemporary trends in the use of water in landscape architecture. Student should take an initiative in creations of projects, as well as be able to objectively assess her/his own ideas and be active in discussions.

BASIC LITERATURE


SUPPLEMENTARY LITERATURE


Course:
WATER IN NATURAL AND CULTURAL LANDSCAPE

Course status:
elective

ECTS Code: 02922-10-Br/117

Field of Study: Landscape Architecture

Studies: regular

Level of studies: 1st degree - undergraduate

year/semester: not applicable / summer

Type of activities:
lectures and classes

Number of hours per semester/week:
lectures: 15 / 1
classes: 30 / 2

Teaching methods:
lectures: information lecture, description, explanation
classes: production classes, with the use of a computer, panel discussion and analysis of the design as well as presence at lectures

Form/conditions of obtaining a credit:
Exam/The course ends with an examination and grading, based on the practical knowledge and presence

Number of ECTS points: 5

Lecture language: english/polish

Introductory courses:

Preliminary requirements: basic knowledge of hydrological processes, cartographic skills

The course is executed by:
Department of Land Reclamation and Environmental Management
http://www.uwm.edu.pl/katemel
ul. Plac Łódzki 2, 10-759 Olsztyn,
tel.: 0 89 525 43 49,
fax: 0 89 525 39 92

Person responsible for the course execution:
dr hab. Katarzyna GLINSKA-LEWCZUK

Additional comments:
no additional comments

ECTS code: AAA---BB---CC---DD---EE---FF

AAA – Field of study code in ECTS system,
BB – number of field of study,
CC – 1 Bachelor studies; 2 Master studies; 3 – PhD studies,
DD – specialty number,
EE – course status,
FF – next course number in course group.
### Detailed subject matter of the lectures

02922-10-B/117  
**WATER IN NATURAL AND CULTURAL LANDSCAPE**  
ECTS: 5  
**WODA W KRAJOBRAZIE NATURALNYM I KULTUROWYM**

#### LECTURES

<table>
<thead>
<tr>
<th>No.</th>
<th>Content</th>
<th>Number of hours</th>
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<tbody>
<tr>
<td>1</td>
<td>The importance of water for human life. Properties of water as a substance. Natural factors influencing water origin, location and movement in the landscape.</td>
<td>2</td>
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<tr>
<td>2</td>
<td>Role of water in the natural and cultural landscapes: Historical overview from great ancient civilisations to present times. Water as a symbol and a detail in the architecture and art. Water as a factor limiting economical development.</td>
<td>2</td>
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<tr>
<td>3</td>
<td>Groundwater types and origin. Influence of ground water on the landscape physiography. Riparian areas. Relationship between groundwater and the landscape architecture.</td>
<td>2</td>
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<tr>
<td>4</td>
<td>Flowing water. Effect of flowing water dynamic on the erosive forms in the landscape. Fluvial forms. Longitudinal profile of a river channel, morphology of the river channels. Process of the river channel “ageing”. Extreme hydrological events and landscape change. River floodplains as natural ecological corridors.</td>
<td>2</td>
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<td>5</td>
<td>Stagnant water ecosystems in the landscape. Origin and causes of degradation of natural and artificial lakes and ponds. Scenarios of the natural evolution of the hydrogenic ecosystems in the landscape. Role of landscape architects in the efficient protection of rivers/lakes bank zones against degradation.</td>
<td>2</td>
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<td>6</td>
<td>Antropogenic changes of the water ecosystems. Hydrotechnical structures in the river valleys, damming and straightening of channels, dredging. Built-up of the bank zones in rural and urban areas. Water in the city: from aqueducts to water pipe systems. Waterfronts. Boulevards. Examples.</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>Methods of the water resources regulation in the landscape. Restoration of ecosystems – aims, rules and efficiency of the methods used. Presentation of the biggest projects in the world.</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>Written exam based on the lectures and suggested literature.</td>
<td>1</td>
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#### Detailed subject matter of the classes

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#### CLASSES

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<tr>
<td>1</td>
<td>Hydrographic catchment (watershed, basin). Definition and types. Catchment divide. Hierarchy of catchments. Analysis of a chosen river catchment morphometry based on the hydrographic maps, hydrological data.</td>
<td>2</td>
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<td>2</td>
<td>Identifying and detection of the reach of the hydromorphic landscapes in the catchment area.</td>
<td>2</td>
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<tr>
<td>3</td>
<td>Cross section of a river valley. Zones of the main vegetation types. Land use.</td>
<td>2</td>
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<td>4</td>
<td>The flood risk zones. Part 1. Hydrological calculations.</td>
<td>2</td>
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<td>5</td>
<td>The flood risk zones. Part 2. Graphical interpretation. The reach of the Q1% and Q10% zones.</td>
<td>2</td>
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<tr>
<td>6</td>
<td>The flood risk zones. Part 3. Concept design of the river floodplain management. Panel discussion over the projects.</td>
<td>2</td>
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<tr>
<td>7</td>
<td>Technical project of the sharp-edged weir. Analysis of the hydrological data for the given river/stream channel.</td>
<td>2</td>
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<td>8</td>
<td>Technical project of the sharp-edged weir. Weir flow calculations.</td>
<td>2</td>
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<td>9</td>
<td>Technical project of the sharp-edged weir. Weir flow calculations and the assessment of the stream energy for electricity production.</td>
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<td>10</td>
<td>Technical project of the sharp-edged weir. Retention reservoir morphometry. The assessment of water capacity and water residence time.</td>
<td>2</td>
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<td>11</td>
<td>Technical project of the sharp-edged weir. Retention reservoir – management of the bank zone. The design for the recreation and touristic. Panel discussion over the projects.</td>
<td>2</td>
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<tr>
<td>12</td>
<td>Introduction to the hydromorphological assessment of the river channel. Flow velocity and discharge measurements (Outdoor classes).</td>
<td>2</td>
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<tr>
<td>13</td>
<td>Hydromorphological assessment of a river channel. Comparison analysis of the data (Outdoor classes).</td>
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<td>14</td>
<td>Grading based on the practical knowledge.</td>
<td>2</td>
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