University of Gdańsk

# Subject card

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| Subject name and code | Small and Large Scale Water Retention - tutorials, PG_00201446 | | |
| Field of study | Water Management and Protection of Water Resources | | |
| Date of commencement of studies | October 2026 | Academic year of realisation of subject | 2027/2028 |
| Education level | Bachelor's studies | Subject group | Obligatory subject group in the field of study<br>Subject group related to practical vocational preparation |
| Mode of study | full-time studies | Mode of delivery | at the university |
| Year of study | 2 | Language of instruction | Polish |
| Semester of study | 4 | ECTS credits | 1.0 |
| Learning profile | practical | Assessment form | credit |
| Conducting unit | Centrum Monitoringu i Ochrony Wód -> Faculty of Oceanography and Geography -> Rector | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr Włodzimierz Golus | |
| | Teachers | | |

**Lesson types**

| Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
|---|---|---|---|---|---|---|
| Number of study hours | 0.0 | 15.0 | 0.0 | 0.0 | 0.0 | 15 |

E-learning hours included: 0.0

**Learning activity and number of study hours**

| Learning activity | Participation in didactic classes included in study plan | Participation in consultation hours | Self-study | SUM |
|---|---|---|---|---|
| Number of study hours | 15 | 1.0 | 9.0 | 25 |

**Subject objectives**

1. Demonstration of the role and significance of small and large retention in shaping the water cycle in the natural environment.
2. Understanding the technical actions taken to increase catchment water storage.
3. Understanding the importance of small and large Storage in mitigating the impacts of extreme hydrological events.
4. Introduction to methods for assessing the retention capacity of catchment.

| Learning outcomes | Course outcome | Subject outcome | Method of verification |
|---|---|---|---|
| | [GWOZWL3-W05] The student has advanced knowledge and understanding of assumptions of the ecosystem approach to management of the environment and human activities in the environment as well as the development directions in the field of applied solutions and scientific research for the protection and restoration of water resources in selected divisions of the national economy. | By utilizing an ecosystem approach to environmental management, student understands solutions aimed at water resource protection, incorporating knowledge of both large and small retention. Additionally, recognizes the significance of actions undertaken to enhance catchment and/or reservoir hydrological processes. | [SW1] oral statement/ conversation/discussion<br>[SW2] presentation/project/paper/ report<br>[SW5] implementation of a problem task |
| | [GWOZWL3-W04] The student is familiar with advanced research techniques, methods and tools currently used in water management and the protection of water resources, in both the natural and<br>social sciences, including advanced<br>statistical and IT tools enabling the description, modelling and interpretation of<br>data concerning phenomena and processes<br>occurring in the aquatic environment, as well as<br>tools for describing relationships within<br>socio-ecological systems. | The student learns contemporary research techniques and methods used in making decisions to increase water resources through the use of both small and large retention. Student can calculate and interpret data in the context of water balance and understands the natural relationships of individual components of the water cycle. | [SW1] oral statement/ conversation/discussion<br>[SW2] presentation/project/paper/ report<br>[SW3] text preparation/written work |
| | [GWOZWL3-U03] The student has the ability observe and describe the changes taking place in water management and predict further directions of its development as well as conduct a critical analysis of case studies of problems of water management and protection of water resources in terms of impact on ecological, social and economic systems; natural valorization and assessment of quality of the environment. | The ability to independently observe and describe phenomena occurring within the water cycle, coupled with a critical analysis that considers the valuation of water resource quality. Understanding the implications of temporal variability in the water balance, including its effects on the environment, human life, and the economy. | [SU1] oral statement/conversation/ discussion<br>[SU2] presentation/project/paper/ report<br>[SU3] text preparation/written work |
| | [GWOZWL3-U06] The student has the ability assess the impact of planned investments on value and quality of water resources and propose options for solutions to protect and restore water resources, recognize their weaknesses and strengths as well as opportunities and threats. | The ability to assess the impact of ongoing and planned investments on specific components of the catchment or reservoir water balance, and to identify the strengths and weaknesses of proposed solutions aimed at increasing water resources or enhancing the retention capabilities of areas or waterbodies. | [SU1] oral statement/conversation/ discussion<br>[SU2] presentation/project/paper/ report<br>[SU3] text preparation/written work |
| | [GWOZWL3-K03] The student has the ability systematic further education and professional development, updating and expand their knowledge and skills, understands the limitations of his own knowledge in the context of civilization progress and recognizes authorities in the professional and scientific environment. | By becoming acquainted with the latest trends and solutions in global water resource conservation, student understands the advancements in this field and the necessity of continually updating the knowledge. | [SK1] oral statement/conversation/ discussion<br>[SK2] presentation/project/paper/ report<br>[SK3] text preparation/written work |

<table>
<tr><td>Subject contents</td><td>Assessment of reservoir retention capacity based on water balance calculations.<br><br>Hydrological extreme events in the catchment.<br><br>Characterization of topographic and morphological conditions of the catchment.<br><br>Direct and indirect measures and indicators for assessing the retention potential of catchments and reservoirs.<br><br>Evaluation of the potential for increasing surface retention in catchments using technical procedures.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Project</td><td>51.0%</td><td>75.0%</td></tr>
<tr><td>Presentation</td><td>51.0%</td><td>25.0%</td></tr>
</table>
</td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>1. Bajkiewicz-Grabowska E., Mikulski Z., 2006, Hydrologia ogólna, PWN, Warszawa, 340 s.<br>2. Kowalczak P., Farat R., Kępińska-Kasprzak M., Kuźnicka M., Magier P.,1997, Hierarchia potrzeb obszarowych małej<br>retencji, Mat. Bad. IMGW, Gospodarka wodna i ochrona wód 19: 1-91.<br>3. Mioduszewski W., 2003, Mała retencja: ochrona zasobów wodnych i środowiska naturalnego, Wyd. IMUZ, Falenty,<br>49 s.</td></tr>
<tr><td>Supplementary literature</td><td>1. Choiński A., 2008, Limnologia fizyczna Polski, Wyd. Nauk. UAM, Poznań, 547 s.<br>2. Mioduszewski W., 2006, Małe zbiorniki wodne, IMUZ, Falenty, 127 s.</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td></td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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