



Subject card

| | | | | | | | |
|---|---|--|----------|-------------------------------------|--|------------|-----|
| Subject name and code | Water Management, PG_00049422 | | | | | | |
| Field of study | Environmental Engineering | | | | | | |
| Date of commencement of studies | October 2021 | Academic year of realisation of subject | | | 2023/2024 | | |
| Education level | first-cycle studies | Subject group | | | Optional subject group Subject group related to scientific research in the field of study | | |
| Mode of study | Full-time studies | Mode of delivery | | | at the university | | |
| Year of study | 3 | Language of instruction | | | Polish | | |
| Semester of study | 6 | ECTS credits | | | 3.0 | | |
| Learning profile | general academic profile | Assessment form | | | assessment | | |
| Conducting unit | Faculty of Civil and Environmental Engineering | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr hab. inż. Tomasz Kolerski | | | | | |
| | Teachers | dr hab. inż. Tomasz Kolerski | | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 30.0 | 15.0 | 0.0 | 0.0 | 0.0 | 45 |
| | 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 | 45 | | 5.0 | | 35.0 | 85 |
| Subject objectives | The course aims to emphasize the advantages of interdisciplinary work and team work aimed at solving problems in the water resources management | | | | | | |

| Learning outcomes | Course outcome | Subject outcome | Method of verification |
|-------------------|--|--|---|
| | [K6_W05] knows the theoretical basis of hydromechanics and its practical models, necessary to solve technical problems in the field of environmental engineering (sanitary engineering, water melioration, water management and flood protection, pollution spread) | The student knows the basics of the geomorphological hydrograph model which can be used to solve the practical problem of calculating the runoff from an uncontrolled catchment; the student knows the basics of the equidistant method for determining the usable capacity of a tank; the student knows the submissions of water management plans in a reservoir during a flood and is able to use them to calculate the permanent reserve of the reservoir | [SW1] Assessment of factual knowledge |
| | [K6_W04] possesses elementary knowledge in the field of land mechanics, ground science, land reclamation and geotechnics; has basic knowledge about the composition of air, water and soil, environmental pollution and processes responsible for their formation and ways to reduce them, knows the principles and organization of sustainable water management | The student knows the water resources of the globe and Poland in relation to rainwater and surface water resources; Knows the rules of water retention and small retention systems; knows the characteristics of the tank regime and the division of the tank capacity, can define and describe the characteristic and guaranteed flows; is able to classify water management plans in a reservoir under normal conditions and water deficits and during floods; knows the principles of operation of dry retention reservoirs; knows technical and non-technical measures in flood protection; knows the role of dikes in flood protection; can classify drought as a hydrological phenomenon | [SW1] Assessment of factual knowledge |
| | [K6_U01] has the ability to self-education, can obtain information from literature, databases and other sources, uses information technology, Internet resources; can integrate the obtained information, make their interpretation, as well as draw conclusions and formulate and justify opinions | The student knows how to use Internet resources in the field of meteorological and hydrological databases; is able to use topographic maps to determine the catchment boundary; is able to interpret hydrological maps in order to determine the classification of watercourses; The student is able to draw conclusions from the obtained results of calculations. | [SU2] Assessment of ability to analyse information |
| | [K6_W01] has knowledge in the field of mathematics, including: linear algebra, mathematical analysis and elements of mathematical statistics, probability theory, applications of mathematics, including mathematical methods and numerical methods, necessary for: 1) description and analysis of hydrological phenomena; 2) description and analysis of meteorological phenomena; 3) solving project tasks of the sanitary industry; | The student is able to calculate the amount of effective precipitation on the basis of meteorological data and information about the use of the catchment area; the student is able to calculate the runoff from an uncontrolled catchment using the geomorphological hydrograph model. | [SW1] Assessment of factual knowledge |
| | [K6_U03] can prepare documentation regarding the implementation of an engineering task/project and prepare a text or presentation including a discussion of the results of the implementation | The student is able to prepare documentation concerning the determination of the usable capacity of the tank; the student is able to prepare documentation on determining the permanent retention of the reservoir; The student is able to discuss the results of the presented documentation | [SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task |

| | | | |
|--|--|--|-------------------------------|
| Subject contents | The course is designed to familiarize students with the theory and practice of planning and managing water resources. As part of the course, students learn about the water resources of the Earth and Poland in relation to rainwater and surface water resources; Students learn the principles of water retention as well as the methods of operation and the role of small retention systems. The student learns the characteristics of the tank regime and the division of the tank capacity as well as is able to define and describe the characteristic and guaranteed flows. As part of the course, the student acquires knowledge about water management plans in a reservoir under normal conditions and water deficits as well as during floods; knows the principles of operation of dry retention reservoirs; knows technical and non-technical measures in flood protection; knows the role of dikes in flood protection; can classify drought as a hydrological phenomenon. | | |
| Prerequisites and co-requisites | Hydraulics, hydrology, fluid mechanics | | |
| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
| | Reports | 60.0% | 30.0% |
| | Final test | 60.0% | 70.0% |
| Recommended reading | Basic literature | <p>Lambor L. (1962), <i>Gospodarka wodna na zbiornikach retencyjnych</i> Arkady</p> <p>Dziewoński Z. (1973) <i>Rolnicze zbiorniki retencyjne</i> Warszawa</p> <p>Ciepielowski A. (1999) <i>Podstawy gospodarowania wodą SGGW</i></p> <p>Kolerski T. (2014) <i>Praktyczne aspekty gospodarki wodnej w projektowaniu zbiorników retencyjnych</i></p> | |
| | Supplementary literature | <p>1. Cech, T., V., Principles of Water Resources, John Wiley & Sons, Inc. 2002</p> <p>2. Chow, V.T., Open-channel Hydraulics, McGraw-Hill, 1959</p> <p>3. Dzurik, A., A., Water Resources Planning (3rd ed), Rowman & Littlefield Pub. Inc., 2003</p> | |
| | eResources addresses | <p>Podstawowe</p> <p>https://www.researchgate.net/publication/263043106_Praktyczne_aspekty_gospodarki_wodnej_w_projektowaniu</p> <p>-</p> <p>Adresy na platformie eNauczanie:</p> | |
| Example issues/ example questions/ tasks being completed | <ul style="list-style-type: none"> • Determination of the usable capacity of the tank • Determination of the permanent retention of a reservoir • Calculation of the geomorphological hydrograph | | |
| Work placement | Not applicable | | |