



## Subject card

|   |   |  |   |            |  |         |     |
|---|---|--|---|------------|--|---------|-----|
| Subject name and code                       | Hydraulics and hydrology, PG_00041517   |  |   |            |  |         |     |
| Field of study                              | Civil Engineering   |  |   |            |  |         |     |
| Date of commencement of studies             | October 2023  | Academic year of realisation of subject  |   |            | 2023/2024  |         |     |
| Education level                             | second-cycle studies  | Subject group  |   |            | Optional subject group<br>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                               | 1   | Language of instruction  |   |            | English  |         |     |
| Semester of study                           | 1   | ECTS credits   |   |            | 2.0  |         |     |
| Learning profile                            | general academic profile  | Assessment form  |   |            | assessment   |         |     |
| Conducting unit                             | Department of Hydraulic Engineering -> Faculty of Civil and Environmental Engineering   |  |   |            |  |         |     |
| Name and surname of lecturer (lecturers)    | Subject supervisor  |  |   |            |  |         |     |
|   | Teachers  |  | dr inż. Andam Mustafa<br>dr hab. inż. Tomasz Kolerski |            |  |         |     |
| Lesson types and methods of instruction     | Lesson type   | Lecture  | Tutorial  | Laboratory | Project  | Seminar | SUM |
|   | Number of study hours   | 15.0   | 15.0  | 15.0       | 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   |            | 0.0  |         | 50  |
| Subject objectives                          | Students should master the following capacities:<br><br>- analysis of hydrological processes in catchment,<br><br>- determination of open-channel hydraulic parameters, oriented towards problems of hydroengineering,  |  |   |            |  |         |     |
| Learning outcomes                           | Course outcome  | Subject outcome  |   |            | Method of verification   |         |     |
|   | [K7_W11] has deep knowledge of marine and inland hydrotechnical constructions; has knowledge about hydraulic and hydrological constrains in design and exploitation of buildings  | Student knows how to calculate hydraulics of hydroengineering structures, Knows procedures to calculate effective rainfall, knows how to calculate flood storage of the retention reservoirs |   |            | [SW1] Assessment of factual knowledge  |         |     |
|   | [K7_U10] can analyse complicated environmental loads acting on a construction; can apply proper processes to design marine and hydroengineering constructions taking into consideration hydrological and hydraulic impact   | Student knows how to calculate surface runoff base on the UH theory, Knows how to determine parameters of hydraulic structures base on hydraulic calculations                                |   |            | [SU1] Assessment of task fulfilment  |         |     |
| Subject contents                            | LECTURE Hydrological cycle. Hydrological properties of catchment area. Parameters of the river catchment. The water balance of the river catchment. Run-off. Surface run-off. Unit hydrogram. Flow in rivers. Storm flood and characteristic flows in rivers. Open channel steady and unsteady flow. Hydrologic statistics. Ice phenomena on rivers. CLASSES and LAB Hydraulic and hydrological computations and some laboratory exercises on hydrological processes. |  |   |            |  |         |     |
| Prerequisites and co-requisites             | No requirements   |  |   |            |  |         |     |

| Assessment methods and criteria                                | Subject passing criteria  | Passing threshold   | Percentage of the final grade |
|--|---|---|-------------------------------|
|  | Final test  | 60.0%   | 30.0%                         |
|  | Midterm colloquium  | 60.0%   | 40.0%                         |
|  | Lab reports   | 60.0%   | 30.0%                         |
| Recommended reading  | Basic literature  | 1. Van Te Chow et al., Applied Hydrology, McGRAW-HILL, 1988<br>2. Van Te Chow, Open-Channel Hydraulics, McGRAW-HILL, 1957<br>3. Mays, L. Water Resources Engineering, Willey, 2006  |                               |
|  | Supplementary literature  | 1. Czetwertyński E., Utrysko B., Hydraulika i hydromechanika, PWN 1986<br>2. Kubrak J., Hydraulika techniczna, SGGW 1998<br>3. Byczkowski A., Hydrologia, SGGW 1996<br>4. Ozga-Zielińska M., Brzeziński J.: Hydrologia stosowana, Wydawnictwo Naukowe PWN Warszawa, 1994. |                               |
|  | eResources addresses  | Adresy na platformie eNauczanie:  |                               |
| Example issues/<br>example questions/<br>tasks being completed | - analysis of hydrological processes in catchment,<br><br>- determination of open-channel hydraulic parameters. |   |                               |
| Work placement   | Not applicable  |   |                               |

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