



Subject card

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| Subject name and code | URBAN HYDROLOGY, PG_00060009 | | | | | | |
| Field of study | Environmental Engineering | | | | | | |
| Date of commencement of studies | February 2025 | Academic year of realisation of subject | | | 2025/2026 | | |
| Education level | second-cycle studies | Subject group | | | Obligatory subject group in the field of study 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 | 2 | Language of instruction | | | English | | |
| Semester of study | 3 | ECTS credits | | | 4.0 | | |
| Learning profile | general academic profile | Assessment form | | | exam | | |
| Conducting unit | Faculty of Civil and Environmental Engineering | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr hab. inż. Katarzyna Weinerowska-Bords | | | | | |
| | Teachers | | | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 30.0 | 15.0 | 0.0 | 15.0 | 0.0 | 60 |
| | 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 | 60 | 5.0 | | 38.0 | 103 | |
| Subject objectives | Recognizing and understanding the problem of the influence of the urbanization on hydrological processes and formation of catchment runoff. Understanding the problems of the consequences of computational method selection on accuracy of the results. Ability of application of basic methods of runoff calculation. | | | | | | |
| Learning outcomes | Course outcome | Subject outcome | | | Method of verification | | |
| | K7_W06 | The student selects computational methods depending on the purpose of the task and the characteristics of the analyzed area. Is able to select coefficients and justify their choice and interpret the obtained results. | | | [SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge | | |
| | K7_W09 | The student has in-depth and structured knowledge of the hydrology of urbanized catchments and the impact of urbanization on water circulation processes. | | | [SW1] Assessment of factual knowledge | | |
| | K7_U03 | The student solves the design task and prepares a report containing a description of the calculations, analysis of the results and conclusions. | | | [SU5] Assessment of ability to present the results of task [SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment | | |
| | K7_U06 | The student selects computational methods depending on the purpose of the task and the characteristics of the analyzed area. Is able to select coefficients and justify their choice and interpret the obtained results. | | | [SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment | | |

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| Subject contents | The hydrological cycle in natural and modified environment. Urban catchment and its specificity. Impact of urbanization on the hydrology cycle and quantity of runoff. Definition of rainfall-runoff model. Classifications of hydrological models. Catchment characteristics and their influence on runoff formation. Rainfall as the basic factor determining runoff. IDF formulas. Time of runoff concentration. Global and integrated models for runoff calculations. | | |
| Prerequisites and co-requisites | Recommended prior holding of the course of Hydrology | | |
| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
| | Project - 2 reports + test | 60.0% | 33.0% |
| | Tutorials - control exercise (test) | 60.0% | 33.0% |
| | Lecture - exam (theory) | 60.0% | 34.0% |
| Recommended reading | Basic literature | Akan, A.O., Houghtalen, R.J.: Urban Hydrology, Hydraulics and Stormwater Quality. Engineering Applications and Computer Modeling. John Wiley and Sons, Inc. (2003) | |
| | Supplementary literature | 1. Highway Hydrology. Publ. of US Department of Transportation (2002) 2. Hydrologic Modeling System HEC-HMS. Technical Reference Manual (2000) 3. Chow, V.T.: Handbook of Applied Hydrology. McGraw Hill Book Company, New York (1964) | |
| | eResources addresses | Adresy na platformie eNauczanie: | |
| Example issues/ example questions/ tasks being completed | <p>Calculate maximal capacity of the analyzed channel.</p> <p>Calculate with use of rational method the peak value of outflow discharge in urban basin.</p> <p>Explain the impact of urbanization on particular processes determining stormwater outflow from the catchment.</p> <p>Explain the concept of "time of runoff concentration".</p> <p>Calculate the time of runoff concentration in the analyzed basin.</p> | | |
| Work placement | Not applicable | | |

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