



MODULE SPECIFICATION

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|---------------------------------------|---------------------------|
| Module code | |
| Module title in Polish | Kanalizacja ogólnospławna |
| Module title in English | Combined Sewage Systems |
| Module running from the academic year | 2016/2017 |

A. MODULE IN THE CONTEXT OF THE PROGRAMME OF STUDY

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|---|--|
| Field of study | Environmental Engineering |
| Level of qualification | first cycle (first cycle, second cycle) |
| Programme type | academic (academic/practical) |
| Mode of study | full-time (full-time/part-time) |
| Specialism | Sanitary Pipelines and Systems |
| Organisational unit responsible for module delivery | Department of Piped Utility Systems |
| Module co-ordinator | Emilia Kuliczowska, PhD hab., Eng. |
| Approved by: | Prof. Andrzej Kuliczowski, PhD hab., Eng. |

B. MODULE OVERVIEW

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| Module type | programme-specific module (core/programme-specific/elective HES*) |
| Module status | optional module (compulsory/optional) |
| Language of module delivery | Polish/English |
| Semester in the programme of study in which the module is taught | semester 6 |
| Semester in the academic year in which the module is taught | summer semester (winter semester/summer semester) |
| Pre-requisites | None (module code/module title, where appropriate) |
| Examination required | No (Yes/No) |
| ECTS credits | 1 |

* elective HES – elective modules in the Humanities and Economic and Social Sciences

| Mode of instruction | lectures | classes | laboratories | project | others |
|--------------------------|----------|---------|--------------|---------|--------|
| Total hours per semester | 15 | | | | |



C. LEARNING OUTCOMES AND ASSESSMENT METHODS

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|--------------------|---|
| Module aims | The aim of the module is to acquaint students with fundamental principles of calculating the combined sewage system (CSS), i.e. with the principles of determining the value of flow at subsequent network sections, the selection of diameters, or determining submerging. |
|--------------------|---|

| Module outcome code | Module learning outcomes | Mode of instruction (l/c/lab/p/ others) | Corresponding programme outcome code | Corresponding discipline-specific outcome code |
|---------------------|--|---|--------------------------------------|---|
| W_01 | A student knows the principle of operation as regards CSS. | I | IŚ_W09 | T1A_W03 T1A_W04 T1A_W05 T1A_W06 T1A_W07 |
| W_02 | A student is familiar with various solutions applied in CSS. | I | IŚ_W06 IŚ_W09 | T1A_W03 T1A_W04 T1A_W05 T1A_W06 T1A_W07 |
| W_03 | A student knows the rules binding while routing CSS ducts. | I | IŚ_W02 IŚ_W05 | T1A_W02 T1A_W05 T1A_W07 |
| W_04 | A student knows the method of calculating flows in CSS ducts. | I | IŚ_W01 IŚ_W05 IŚ_W12 | T1A_W01 T1A_W02 T1A_W03 T1A_W04 T1A_W05 T1A_W07 |
| W_05 | A student is knowledgeable about the principle of determining the submerging of CSS and selecting the diameters of these ducts. | I | IŚ_W01 IŚ_W05 IŚ_W12 | T1A_W01 T1A_W02 T1A_W03 T1A_W04 T1A_W05 T1A_W07 |
| U_01 | A student can obtain information from databases, literature on the subject, and other sources. Moreover, a student can integrate the obtained information, interpret it, draw conclusions, and justify his/her opinions. | I | IŚ_U02 | T1A_U01 T1A_U05 T1A_U07 |
| U_02 | A student can work individually; a student can prepare and realise the schedule of works in terms of the realised task. | I | IŚ_U03 | T1A_U02 T1A_U08 |
| U_03 | A student is capable of self-education, e.g. in order to raise his/her professional competences. | I | IŚ_U07 | T1A_U05 |
| U_04 | A student can design CSS, including determining the flow at particular sections of these networks, select duct diameters, and determine their submerging. | I | IŚ_U12 IŚ_U16 | T1A_U03 T1A_U05 T1A_U07 T1A_U08 T1A_U09 T1A_U10 T1A_U11 T1A_U13 T1A_U14 T1A_U15 T1A_U16 |
| K_01 | A student can work individually and in a team on the project. | I | IŚ_K01 | T1A_K03 |
| K_02 | A student is aware of the necessity of raising his/her professional and personal competences. A student individually improves and broadens his/her knowledge in terms of modern CSS solutions. | I | IŚ_K03 | T1A_K01 T1A_K02 T1A_K04 |



| | | | | |
|------|--|---|--------|---------|
| K_03 | A student understands the significance of technical advances and the necessity to implement new technological solutions in sewage systems, understands non- technical aspects of engineering activity. | I | IS_K09 | T1A_K02 |
|------|--|---|--------|---------|

Module content:

1. Topics to be covered in the lectures

| No. | Topics | Module outcome code |
|-------|--|--------------------------------------|
| 1-2 | The principles of operation as regards CSS (2 hours). | W_01 U_01 U_03 K_02 K_03 |
| 3-7 | Routing the CSS ducts. Calculating flows in CSS ducts (5 hours). | W_03 W_04 U_02 U_04 K_01 |
| 8-10 | Selecting the diameters of ducts (3 hours). | W_05 U_02 U_04 K_01 |
| 11-13 | Determining the submergence of CSS ducts. | W_05 U_02 U_04 K_01 |
| 14-15 | Discussing various solutions as regards CSS. | W_02 U_01 U_03 K_02 K_03 |

Assessment methods

| Module outcome code | Assessment methods <i>(Method of assessment; for module skills – reference to specific project, laboratory and similar tasks)</i> |
|---------------------|--|
| W_01 | A test |
| W_02 | A test |
| W_03 | A test |
| W_04 | A test |
| W_05 | A test |
| U_01 | A test |
| U_02 | A test |
| U_03 | A test |
| U_04 | A test |
| K_01 | Observation of students during the classes |
| K_02 | A test. Participation in the discussion in the lecture |
| K_03 | Participation in the discussion in the lecture |

D. STUDENT LEARNING ACTIVITIES



| ECTS summary | | |
|--------------|--|-------------------------------|
| | Type of learning activity | Study time/ credits |
| 1 | Contact hours: participation in lectures | 15 |
| 2 | Contact hours: participation in classes | |
| 3 | Contact hours: participation in laboratories | |
| 4 | Contact hours: attendance at office hours (2-3 appointments per semester) | 1.5 |
| 5 | Contact hours: participation in project-based classes | |
| 6 | Contact hours: meetings with a project module leader | |
| 7 | Contact hours: attendance at an examination | |
| 8 | | |
| 9 | Number of contact hours | 16.5 <i>(total)</i> |
| 10 | Number of ECTS credits for contact hours <i>(1 ECTS credit = 25-30 hours of study time)</i> | 0.66 |
| 11 | Private study hours: background reading for lectures | 5.5 |
| 12 | Private study hours: preparation for classes | |
| 13 | Private study hours: preparation for tests | 3 |
| 14 | Private study hours: preparation for laboratories | |
| 15 | Private study hours: writing reports | |
| 16 | Private study hours: preparation for a final test in laboratories | |
| 17 | Private study hours: preparation of a project/a design specification | |
| 18 | Private study hours: preparation for an examination | |
| 19 | | |
| 20 | Number of private study hours | 8.5 <i>(total)</i> |
| 21 | Number of ECTS credits for private study hours <i>(1 ECTS credit = 25-30 hours of study time)</i> | 0.34 |
| 22 | Total study time | 25 |
| 23 | Total ECTS credits for the module <i>(1 ECTS credit = 25-30 hours of study time)</i> | 1 |
| 24 | Number of practice-based hours <i>Total practice-based hours</i> | |
| 25 | Number of ECTS credits for practice-based hours <i>(1 ECTS credit = 25-30 hours of study time)</i> | |

E. READING LIST

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| References | <ol style="list-style-type: none"> Nicklow, Boulos, Muleta: Comprehensive Sewer Collection Systems Analysis Handbook for Engineers and Planners, Innovyze, 2004, Criteria for Sewage Works Design. Water Quality Program, Department of Ecology, State of Washington, 2008 (https://fortress.wa.gov/ecy/publications/documents/9837.pdf) |
| Module website | |