



MODULE SPECIFICATION

| | |
|---------------------------------------|--------------------------|
| Module code | |
| Module title in Polish | Wodociągi 1 |
| Module title in English | Water Supply Pipelines 1 |
| Module running from the academic year | 2016/2017 |

A. MODULE IN THE CONTEXT OF THE PROGRAMME OF STUDY

| | |
|---|---|
| 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; Water Supply, Treatment of Wastewater and Solid Waste |
| Organisational unit responsible for module delivery | Department of Piped Utility Systems |
| Module co-ordinator | Urszula Kubicka, PhD, Eng. |
| Approved by: | Prof. Andrzej Kuliczowski, PhD hab., Eng. |

B. MODULE OVERVIEW

| | |
|--|--|
| Module type | core module (core/programme-specific/elective HES*) |
| Module status | compulsory module (compulsory/optional) |
| Language of module delivery | Polish/English |
| Semester in the programme of study in which the module is taught | semester 3 |
| Semester in the academic year in which the module is taught | winter semester (winter semester/summer semester) |
| Pre-requisites | None (module code/module title, where appropriate) |
| Examination required | No (Yes/No) |
| ECTS credits | 3 |

* 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 | 15 | | 15 | |



C. LEARNING OUTCOMES AND ASSESSMENT METHODS

| | |
|--------------------|---|
| Module aims | The aim of the module is to familiarise students with: basic notions and diagrams of water supply systems; introduce students to the issue of structure and design water supply systems; basic elements and tasks of a water supply system; basic information on water circulation in nature and the methods of obtaining it. |
|--------------------|---|

| 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 basic elements of a water supply system, network types and typical diagrams. | l/c/p | IS_W09 | T1A_W03 T1A_W04 T1A_W05 T1A_W06 T1A_W07 |
| W_02 | A student is knowledgeable about the materials applied in water supply systems. | l/c/p | IS_W06 | T1A_W03 T1A_W04 T1A_W05 T1A_W07 |
| W_03 | A student knows the issues of hydraulic design of water supply systems. | l/c/p | IS_W09 | T1A_W03 T1A_W04 T1A_W05 T1A_W06 T1A_W07 |
| U_01 | A student is capable of designing the selected elements of a water supply system and calculating demand for water as regards a settlement. | l/c/p | IS_U04 IS_U15 IS_U16 | T1A_U03 T1A_U05 T1A_U07 T1A_U08 T1A_U09 T1A_U10 T1A_U11 T1A_U13 T1A_U14 T1A_U15 T1A_U16 |
| U_02 | A student can prepare documentation of a technical project. | l/c/p | IS_U04 | T1A_U03 T1A_U08 T1A_U09 |
| K_01 | A student can work individually. | p | IS_K01 | T1A_K03 |
| K_02 | A student is responsible for the reliability of the obtained results. | p | IS_K02 IS_K05 | T1A_K02 T1A_K03 T1A_K04 T1A_K05 |

Module content:

1. Topics to be covered in the lectures

| No. | Topics | Module outcome code |
|-----|---|------------------------------|
| 1 | Basic notions and definitions applied in water supply systems. The necessity of saving water resources. Ecological aspects of water supply. | W_01 U_01 |
| 2-3 | Water supply. The types of water supply systems, the components of water supply systems. The division of water supply systems according to the determined criteria. The contamination of pipeline water. Water supply system diagrams. Sample solutions of water supply systems. Pressure in a water supply system. | W_01 W_02 W_03 U_01 |
| 4-5 | Water circulation in nature. The reliability of water supply systems. The types of surface, underground, spring, and filtered water (basic characteristics, occurrence, and usefulness for water supply purposes). | W_03 U_01 |
| 6 | The classification of surface, underground, spring, and filtered water on the basis of examples. | W_01 U_02 |
| 7 | Basic systems of raising water pressure. Water supply in the pump system. | W_01 U_02 |
| 8 | Basic development of water supply systems. | W_02 |



2. Topics to be covered in the classes

| No. | Topics | Module outcome code |
|-----|--|----------------------|
| 1-2 | Discussing markings and symbols in calculating water demand for urban and rural settlements. | W_01 W_03 |
| 3-4 | The analysis of daily demand variability in residential housing in relation to previous years (with the indication of the occurred changes). | W_01 W_03 |
| 5 | Indicating differences in designing a well with free and higher pressure water table (taking graphical solutions into consideration). | W_01 W_03 U_02 |
| 6-8 | Calculating hydraulic losses in syphon systems, discussing syphons' deaeration. | W_01 W_03 U_01 |

3. Topics to be covered in the laboratories

| No. | Topics | Module outcome code |
|-----|---|------------------------------|
| 1-3 | Project No 1. Calculating water demand for an urban settlement. | U_01 U_02 K_01 K_02 |
| 3-5 | Project No 2. Designing a single well drilled with graphical determination of filter active length. | U_01 U_02 K_01 K_02 |
| 6-8 | Project No 3. Designing a syphon water intake with hydraulic calculations. | U_01 U_02 K_01 K_02 |

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 |
| U_01 | A test and a project |
| U_02 | A test and a project |
| K_01 | Observation of the students work during the classes |
| K_02 | observation of the students work during the classes. Participation in the discussion during 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 | 15 |



| | | |
|----|--|-----------------------------|
| 3 | Contact hours: participation in laboratories | |
| 4 | Contact hours: attendance at office hours (2-3 appointments per semester) | 2 |
| 5 | Contact hours: participation in project-based classes | 15 |
| 6 | Contact hours: meetings with a project module leader | 2 |
| 7 | Contact hours: attendance at an examination | |
| 8 | | |
| 9 | Number of contact hours | 49 <i>(total)</i> |
| 10 | Number of ECTS credits for contact hours <i>(1 ECTS credit = 25-30 hours of study time)</i> | 1.96 |
| 11 | Private study hours: background reading for lectures | 3 |
| 12 | Private study hours: preparation for classes | 3 |
| 13 | Private study hours: preparation for tests | 10 |
| 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 | 10 |
| 18 | Private study hours: preparation for an examination | |
| 19 | | |
| 20 | Number of private study hours | 26 <i>(total)</i> |
| 21 | Number of ECTS credits for private study hours <i>(1 ECTS credit = 25-30 hours of study time)</i> | 1.04 |
| 22 | Total study time | 75 |
| 23 | Total ECTS credits for the module <i>(1 ECTS credit = 25-30 hours of study time)</i> | 3 |
| 24 | Number of practice-based hours <i>Total practice-based hours</i> | 27 |
| 25 | Number of ECTS credits for practice-based hours <i>(1 ECTS credit = 25-30 hours of study time)</i> | 1.08 |

E. READING LIST

| | |
|----------------|--|
| References | <ol style="list-style-type: none"> 1. Davis M.L.: Water and Wastewater Engineering, McGraw-Hill Education; 1 edition, April 12, 2010; 2. Friebel H.C.: <i>A Dictionary of Civil, Water Resources & Environmental Engineering</i>, January 1, 2013; 3. Nelson T.J.: Water Resources Practice Problems, Engineering Videos; 1 edition, March 11, 2013; 4. PN-B-10725:1997 Water Supply System. Pipeline. Polish educational literature and standards translated into English; 5. Shammas N., Wang L.K.: Water and Wastewater Engineering: Water Supply and Wastewater Removal, Wiley; 3 edition, October 19, 2010 |
| Module website | |