



MODULE SPECIFICATION

Module code	
Module title in Polish	Kanalizacja 1
Module title in English	Sewage 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	Emilia Kuliczowska, PhD hab., 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 4
Semester in the academic year in which the module is taught	summer semester (winter semester/summer semester)
Pre-requisites	Hydraulics (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	30			15	



C. LEARNING OUTCOMES AND ASSESSMENT METHODS

Module aims	The aim of the module is to familiarise students with the types of sewage systems, building objects typical as regards particular sewage systems as well as the principles of designing them.
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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 is knowledgeable about the tasks, components, and types of sewage systems.	l/p	IŚ_W09,	T1A_W03 T1A_W04 T1A_W05 T1A_W06 T1A_W07
W_02	A student knows the types of cross sections of sewage systems; the principles of their hydraulic calculations as well as the principles of designing gravitational sewage systems.	l/p	IŚ_W09, IŚ_W15	T1A_W03 T1A_W04 T1A_W05 T1A_W06 T1A_W07
W_03	A student knows the reinforcements of sewage systems as well as special structures in networks (including storage reservoirs).	l/p	IŚ_W11	T1A_W03 T1A_W04 T1A_W05
U_01	A student can make the calculation of sewage flow values; a student can also design an appropriate section and cord material.	l/p	IŚ_U12, IŚ_U15	T1A_U07 T1A_U08 T1A_U09 T1A_U10 T1A_U14 T1A_U15
U_02	A student can make calculations and design gravitational system of sanitary sewage system.	l/p	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 on the assigned project assignment.	p	IŚ_K01	T1A_K03
K_02	A student is responsible for the reliability of the obtained project results (as well as their interpretation).	p	IŚ_K02	T1A_K02 T1A_K05



Module content:

1. Topics to be covered in the lectures

No.	Topics to be covered in the lectures	Module outcome code
1.	The tasks, components and sewage systems.	W_01
2.	Cross section of sewage systems.	W_02
3.	Hydraulic calculations of channels.	W_02
4.	General principles of designing sewage systems.	W_02
5.	Sanitary sewage system.	W_02
6.	Rainwater drainage system.	W_02
7.	Cascade chambers.	W_03
8.	Semi-distributive sewage system.	W_02
9.	Combined sewage system.	W_02
10.	Stormwater overflow structure.	W_03
11.	Reservoirs.	W_03
12.	Reinforcing sewage systems.	W_03
13.	Special structure on a sewage system network.	W_03

2. Topics to be covered in the classes

No.	Topics to be covered in the classes	Module outcome code
1.	Designing the plan of a sewage system (sanitary and gravitational) for the assigned settlement, according to the assumptions.	W_01 U_01 U_02
2.	Calculating summary sewage outflow for residential and industrial areas.	W_01 W_02 U_01 U_02
3.	The division of the drainage area into partial surfaces together with calculating their values.	W_01 W_02 U_01 U_02
4.	Calculating flows in channels.	W_02 U_01
5.	Selecting channel diameters and slopes.	U_01 U_02
6.	Sewage system depth.	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 and a project
W_02	A test and a project
W_03	A test and a project



U_01	A test and a project
U_02	A test and a project
K_01	A test and a project. Observation of the students work during the classes
K_02	A test and a project. Observation of the students work during the classes

D. STUDENT LEARNING ACTIVITIES

ECTS summary		
	Type of learning activity	Study time/ credits
1	Contact hours: participation in lectures	30
2	Contact hours: participation in classes	
3	Contact hours: participation in laboratories	
4	Contact hours: attendance at office hours (2-3 appointments per semester)	3
5	Contact hours: participation in project-based classes	15
6	Contact hours: meetings with a project module leader	3
7	Contact hours: attendance at an examination	
8		
9	Number of contact hours	51 <i>(sum)</i>
10	Number of ECTS credits for contact hours <i>(1 ECTS credit = 25-30 hours of study time)</i>	2.04
11	Private study hours: background reading for lectures	5
12	Private study hours: preparation for classes	
13	Private study hours: preparation for tests	5
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	14
18	Private study hours: preparation for an examination	
19		
20	Number of private study hours	24 <i>(sum)</i>
21	Number of ECTS credits for private study hours <i>(1 ECTS credit = 25-30 hours of study time)</i>	0.96
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>	32
25	Number of ECTS credits for practice-based hours <i>(1 ECTS credit = 25-30 hours of study time)</i>	1.28

E. READING LIST

References	1. ATV-DVWK-A 157E Sewer System Structures, 2000, p. 32 2. ATV-A 128E Standards for the Dimensioning and Design of Stormwater Structures in Combined
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	<p>Sewers, 1992, p. 74</p> <p>3. DWA-A 139E - DIN EN 1610, Construction and Testing of Drains and Sewers, 2010, p. 10</p> <p>4. DWA-A 118E Hydraulic Dimensioning and Verification of Drain and Sewer Systems, 2006, p. 35</p> <p>5. Bizier P.: Gravity Sanitary Sewer Design and Construction, 2nd Edition, American Society of Civil Engineering, 2007, p. 436</p> <p>6. McKenzie Davis: Water and Wastewater Engineering. Design Principles and Practice, 1st Edition, The McGraw-Hill Companies, 2010, p. 1301</p> <p>6. Punmia B.C., Ashok Kr Jain, Arun Kr. J.: Waste water Engineering, Firewell Media, 1st January 1998, p. 660</p>
Module website	