MODULE SPECIFICATION

Module code	
Module title in Polish	Instalacje sanitarne
Module title in English	Sanitary Systems
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	Agata Zwierzchowska, PhD, Eng.
Approved by:	Prof. Andrzej Kuliczkowski, 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	English
Semester in the programme of study in which the module is taught	semester 5
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	Yes (Yes/No)
ECTS credits	4

* 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		15	

C. LEARNING OUTCOMES AND ASSESSMENT METHODS

Module aims	The aim of the module is to familiarise students as regards sanitary systems (the elements and materials concerning installation, sanitary equipment, the principles of designing, making, and exploiting them); the abilities of designing them.

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 elements of sanitary systems as well as the principles of conducting them.	l/c/p	IŚ_W10	T1A_W04 T1A_W05 T1A_W06 T1A_W07
W_02	A student is familiar with the materials and fittings applied in sanitary systems.	l/p	IŚ_W06	T1A_W03 T1A_W04 T1A_W05 T1A_W07
W_03	A student knows the principles of calculating and dimensioning sanitary systems.	c/p	IŚ_W10	T1A_W04 T1A_W05 T1A_W06 T1A_W07
W_04	A student knows the reasons and methods of preventing secondary water contamination in pipeline installations.	l/c/p	IŚ_W10	T1A_W04 T1A_W05 T1A_W06 T1A_W07
W_05	A student knows the conditions of technical acceptance and exploitation of sanitary systems.	l	IŚ_W10	T1A_W04 T1A_W05 T1A_W06 T1A_W07
U_01	A student can design a pipeline installation for re residential building.	l/c/p	IŚ_U10 IŚ_U19	T1A_U02 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 design the installation of a sanitary sewage system for a residential building.	l/c/p	IŚ_U10 IŚ_U19	T1A_U02 T1A_U03 T1A_U05 T1A_U07 T1A_U08 T1A_U09 T1A_U10 T1A_U11 T1A_U13 T1A_U14 T1A_U15 T1A_U16
U_03	A student can select appropriate materials and fittings for the designed installations.	l/p	IŚ_U15	T1A_U07 T1A_U10 T1A_U14 T1A_U15
U_04	A student can prepare and present a short presentation on a given engineering task.	p	IŚ_U05	T1A_W03 T1A_W04
K_01	A student can work individually on the assigned class and project task.	c/p	IŚ_K01	T1A_K03
K_02	A student is responsible for the reliability of the obtained class and project task (together with their interpretation).	c/p	IŚ_K02	T1A_K02 T1A_K05
K_03	A student individually improves and broadens his/her knowledge as regards sanitary installations.	l/c/p	IŚ_K03	T1A_K01 T1A_K02 T1A_K04

Module content:

1. Topics to be covered in the lectures

No.	Topics	Module outcome code
1	Familiarising students with the syllabus of the lectures, the form of conducting the classes as well as the form of obtaining a credit. Issuing a reading list connected with the subject.	W_01 U_01 K_03
2	Single-zone water pipeline installations.	W_01 U_01 K_03
3	Multi-zone water pipeline installations.	W_01 U_01 K_03
4	Water containers applied in pipeline installations.	W_01 U_01 K_03
5	Secondary water contamination in pipeline installations.	W_04 U_01 K_03
6	Water pipeline connection.	W_01 U_01 K_03
7	Water meters.	W_01 W_02 U_01 U_03 K_03
8	Pipeline installation fittings.	W_02 U_01 U_03 K_03
9	Materials applied in pipeline installations.	W_02 U_03 K_03
10	The elements concerning sewage system installation. House sewer.	U_02 W_01 K_03
11	Horizontal outlet pipelines.	U_02 W_01 K_03
12	Soil pipes, horizontal branches, sanitary equipment and outlet fittings.	U_02 W_01 K_03
13	Ventilation of sewage installation.	U_02 W_01 K_03
14	Materials applied in sewage installations.	U_03 W_02 K_03
15	Testing and final acceptance of pipeline and sewage installations.	W_05 K_03

2. Topics to be covered in the classes

No.	Topics	Module outcome code
1	Familiarising students with the syllabus of the classes, the form of conducting classes as well as with the conditions of obtaining a credit. Issuing a reading list connected with the subject. Graphical marks of the elements of pipeline installations on drawings. The principles of conducting pipeline connections.	W_01 U_01 K_01 K_02 K_03
2	The principles of laying the ducts of pipeline installation as well as placing water outlets. The principles of selecting devices protecting against secondary water contamination in a pipeline installation as well as control units.	W_01 W_04 U_01 K_01 K_02 K_03

3	Determining design water flow in pipeline installations.	W_03 U_01 K_01 K_02 K_03
4	Calculating the required pressure for pipeline installations.	W_03 U_01 K_01 K_02 K_03
5	Graphical marks of the elements of pipeline installations on drawings. The principles of placing sanitary equipment.	W_01 U_02 K_01 K_02 K_03
6	The principles of conducting house sewers, horizontal outlet pipelines, soil pipes, and horizontal branches.	W_01 U_02 K_01 K_02 K_03
7	Calculating sewage intensity flow in a sanitary sewage installation. Dimensioning particular installation elements.	W_03 U_02 K_01 K_02 K_03
8	A test	

3. Topics to be covered in the projects

No.	Topics	Module outcome code
1	Familiarising students with the syllabus of project classes, the form of conducting classes as well as with the conditions of obtaining a credit. Issuing a reading list connected with the subject. Issuing the list of project subjects as regards a pipeline installation and sanitary sewage system for a residential building. Designing connection route.	W_01 W_02 U_01 U_03 K_01 K_02 K_03
2	Designing the system of pipeline installation ducts on a projection of basements as well as repeatable floor. Designing water meters as well as the blocking of devices protecting against secondary water contamination in a pipeline installation.	W_01 W_02 W_04 U_01 U_03 K_01 K_02 K_03
3	Making an axonometric installation development.	W_01 U_01 K_01 K_02
4	Calculating design flow and required pressure as regards water in the installation; checking whether the calculated pressure value is smaller than the assigned available pressure.	W_03 U_01 K_01 K_02 K_03
5	Designing a system of ducts as regards sanitary installation system on a projection of basements as well as a repeatable floor. Designing the route of a hose drain.	W_01 W_02 U_02 U_03 K_01 K_02 K_03
6	Calculating the intensity of sewage flow in the installations; dimensioning particular installation elements.	W_03 U_02 K_01 K_02

		K_03
7	Making installation development.	W_01 U_02 U_04 K_01 K_02
8	Submitting and defending projects.	

Assessment methods

Module outcome code	Assessment methods *(Method of assessment; for module skills – reference to specific project, laboratory and similar tasks)*
W_01	An examination, a test, and a project
W_02	An examination and a project
W_03	An examination, a test, and a project
W_04	An examination, a test, and a project
W_05	An examination
U_01	An examination, a test, and a project
U_02	An examination, a test, and a project
U_03	An examination and a project
U_04	A project
K_01	A test, a project, observation of the students work during the classes
K_02	A test, a project, observation of the students work during the classes
K_03	An examination, a test, and a project

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	**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	**3**
7	Contact hours: attendance at an examination	**2**
8		
9	**Number of contact hours**	**67** *(total)*
10	**Number of ECTS credits for contact hours** *(1 ECTS credit =25-30 hours of study time)*	**2.68**
11	Private study hours: background reading for lectures	**4**
12	Private study hours: preparation for classes	**4**
13	Private study hours: preparation for tests	**6**
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	**9**
19		
20	**Number of private study hours**	**33** *(total)*
21	**Number of ECTS credits for private study hours** *(1 ECTS credit =25-30 hours of study time)*	**1.32**
22	**Total study time**	**100**
23	**Total ECTS credits for the module** *(1 ECTS credit =25-30 hours of study time)*	**4**
24	**Number of practice-based hours** *Total practice-based hours*	**28**
25	**Number of ECTS credits for practice-based hours** *(1 ECTS credit =25-30 hours of study time)*	**1.12**

E. READING LIST

References	1. Panchdhari A.C.: Water Supply and Sanitary Installations. New Age International Publisher, 2000. 2. BS-EN 12056:2000 Gravity drainage systems inside building. 3. BS EN 806-3:2006 Specification for installations inside buildings conveying water for human consumption.
Module website	