



MODULE SPECIFICATION

Module code	
Module title in Polish	Wodociągi 2
Module title in English	Water Supply Pipelines 2
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	Justyna Lisowska, 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	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	Water Supply Pipelines 1 (module code/module title, where appropriate)
Examination required	Yes (No/Yes)
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	15			30	



C. LEARNING OUTCOMES AND ASSESSMENT METHODS

Module aims	The aim of the module is to acquaint students with: the elements of water distribution system, fundamentals of designing water supply systems, objects and devices on networks.
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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 knows the fundamentals of pipe hydraulics.	l/p	IŚ_W12	T1A_W03 T1A_W04 T1A_W07
W_02	A student knows the different solutions of water supply pipelines and is able to identify their advantages and disadvantages (the radius and ring systems).	l/p	IŚ_W09	T1A_W03 T1A_W04 T1A_W05 T1A_W06 T1A_W07
W_03	A student has knowledge on the pumps, pump stations; a student also knows the places of locating them as well as fundamental principles of selecting them.	l/p	IŚ_W09	T1A_W03 T1A_W04 T1A_W05 T1A_W06 T1A_W07
W_04	A student has knowledge about hydrophore devices and methods of protection water supply pipelines from water hammer.	l/p	IŚ_W09	T1A_W03 T1A_W04 T1A_W05 T1A_W06 T1A_W07
W_05	A student lists and describes the various design solutions of water supply reservoir. He knows the methods of determining their volume.	l/p	IŚ_W09	T1A_W03 T1A_W04 T1A_W05 T1A_W06 T1A_W07
W_06	A student knows rules of location of water distribution facilities as well as completion them.	l	IŚ_W09	T1A_W03 T1A_W04 T1A_W05 T1A_W06 T1A_W07
W_07	A student is able to characterize and discuss different material and structural pipelines solutions used in water supply systems.	l	IŚ_W06	T1A_W03 T1A_W04 T1A_W05 T1A_W07
U_01	A student is able to use the appropriate method of hydraulic calculations for various types of water supply systems.	l/p	IŚ_U01	T1A_U08 T1A_U09
U_02	A student can work individually and realise the schedule of work as regards the realised task.	p	IŚ_U03	T1A_U02 T1A_U08
U_03	A student can classified water distribution facilities depending on their construction, site location, destination and function.	l	IŚ_U02	T1A_U01 T1A_U05 T1A_U07
U_04	A student can use appropriately selected methods and devices to solve a particular task.	p	IŚ_U12	T1A_U08 T1A_U09 T1A_U15
U_05	A student is able to design basic elements of water supply systems.	l/p	IŚ_U27	T1A_U15



K_01	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 variation of water consumptions by individual and collective customers.	I	IŚ_K03	T1A_K01 T1A_K02 T1A_K04
K_02	A student understands the necessity of technical progress and implementing new technical and technological solutions in water supply systems (materials and devices).	I	IŚ_K09	T1A_K02
K_03	A student can work individually; a student also understands the necessity of continually evolving.	p	IŚ_K01	T1A_K03

Module content:

1. Topics to be covered in the lectures

No.	Topics	Module outcome code
1	The fundamentals of hydraulics concerning water supply systems. Determining pressure lines for various water supply systems.	W_01 U_04
2	Water supply tanks (their tasks and division). The places of locating tanks in water distribution systems. The fundamentals designing water supply tanks.	W_05 U_01 U_03 K_02
3	Water supply hydropore pressure devices (operation and application).	W_04 U_03 K_01 K_02
4-5	Open and closed water supply systems (differences and similarities); basic principles of providing calculations which concern the network.	W_01 W_02 U_01 U_05 K_01 K_02
6-7	Materials for building water supply network (their division and characteristics).	W_06 W_07 U_05 K_02
8	Realisations concerning water supply systems. The stages of realising. Water tightness of water supply pipelines. Preparation for commissioning.	W_06 U_04 U_02 U_03

2. Topics to be covered in the classes

No.	Topics	Module outcome code
1-2	A project of water supply reservoir (compensation and final reservoir). Determination of the capacity of compensation reservoir by tabular and columnar method.	W_05 W_01 U_03 K_02
3-5	A hydraulic project of water supply system (the radius, manifold system).	W_01 W_02 U_01 U_05



		K_01 K_02
6-8	A hydraulic project of water supply system (the ring system).	W_01 W_02 U_01 U_05 K_01 K_02
9-10	Plotting the pressure line on the longitudinal profile of water supply system.	W_01 W_02 U_01 U_05 K_01 K_02
11-13	Determination of required pressure values in the water supply system in a given unit of the settlement.	W_01 U_04 K_01 K_02
14-15	A project of device witch protect before water hammer.	W_04 U_04 U_05 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	An examination and a project
W_02	An examination and a project
W_03	An examination and a project
W_04	An examination and a project
W_05	An examination and a project
W_06	An examination
W_07	An examination
U_01	An examination and a project
U_02	A project
U_03	An examination
U_04	A project
K_01	Discussion during the classes
K_02	Discussion during the classes
K_03	A Project. Discussion during the classes

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)	3
5	Contact hours: participation in project-based classes	30
6	Contact hours: meetings with a project module leader	10
7	Contact hours: attendance at an examination	2
8		
9	Number of contact hours	60 <i>(sum)</i>
10	Number of ECTS credits for contact hours <i>(1 ECTS credit =25-30 hours of study time)</i>	2.4
11	Private study hours: background reading for lectures	8
12	Private study hours: preparation for classes	
13	Private study hours: preparation for tests	12
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	10
19		
20	Number of private study hours	40 <i>(sum)</i>
21	Number of ECTS credits for private study hours <i>(1 ECTS credit =25-30 hours of study time)</i>	1.6
22	Total study time	100
23	Total ECTS credits for the module <i>(1 ECTS credit =25-30 hours of study time)</i>	4
24	Number of practice-based hours <i>Total practice-based hours</i>	50
25	Number of ECTS credits for practice-based hours <i>(1 ECTS credit =25-30 hours of study time)</i>	2

E. READING LIST

References	
Module website	<ol style="list-style-type: none"> 1. Cabrera Enrique, García-Serra Jorge : Drought Management Planning in Water Supply Systems Water Science and Technology Library Springer , Volume 32 1999 2. Maksimović Čedo, Calomino Francesco : <i>Water Supply Systems, New Technologies</i> , Springer Volume 15 1996 3. Dr. B.C. Punmia, Ashok Kr. Jain, Arun Kr. Jain: <i>Water Supply Engineering</i> 1995 p. 584