MODULE SPECIFICATION

Module code	
Module title in Polish	**Monitoring środowiska**
Module title in English	**Environmental Monitoring**
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	**Water Supply, Treatment of Wastewater and Solid Waste**
Organisational unit responsible for module delivery	**Department of Water and Wastewater Engineering**
Module co-ordinator	**Ewa Ozimina, PhD**
Approved by:	**Lidia Dąbek, PhD hab., Professor of the University**

B. MODULE OVERVIEW

Module type	**core 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				

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C. LEARNING OUTCOMES AND ASSESSMENT METHODS

Module aims	The aim of the module is to acquaint students with knowledge on theoretical fundamentals of environmental monitoring; diagnosing and forecasting the stages of environmental phenomena and processes; another aim is to acquaint students with the knowledge on the fundamentals of the following systems: monitoring, gathering, sending, and processing data on environmental condition.

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 theoretical and substantive fundamentals of environmental monitoring.	l	IŚ_W16 IŚ_W17	T1A_W03; T1A_W05 T1A_W07; T1A_W08 T1A_W02
W_02	A student knows the fundamentals of the following systems: monitoring, gathering, sending, and processing data on environmental quality; informing and warning on environmental health hazards.	l	IŚ_W17 IŚ_W18	T1A_W02; T1A_W07 T1A_W08
W_03	A student knows basic requirements concerning units conducting research for the needs of environmental monitoring.	l	IŚ_W05, IŚ_W16 IŚ_W17	T1A_W03; T1A_W05 T1A_W07; T1A_W08 T1A_W02
W_04	A student understands the phenomena occurring in the environment influenced by economic activity of a man, meteorological and hydrological conditions and cross-frontier influences.	l	IŚ_W16 IŚ_W17	T1A_W03; T1A_W05 T1A_W07; T1A_W08 T1A_W02
U_01	A student can assess the quality of environmental components on the basis of monitoring data.	l	IŚ_U02	T1A_U01; T1A_U05 T1A_U07
U_02	A student understands the significance of information obtained as part of State Environmental Monitoring in environmental management.	l	IŚ_U02 IŚ_U12	T1A_U01; T1A_U05 T1A_U07 T1A_U08; T1A_U09 T1A_U15
U_03	A student can interpret cause and effect links between economic activity of a man and the quality of the environment.	l	IŚ_U02 IŚ_U07	T1A_U01; T1A_U05 T1A_U07
K_01	A student understands the significance of technical progress and the necessity of implementing new technical solutions in order to decrease negative impact on the environment.	l	IŚ_K09	T1A_K02
K_02	A student understands the necessity of individual education in order to improve his/her professional competences.	l	IŚ_K03	T1A_K01; T1A_K02 T1A_K04
K_03	A student understands the necessity of passing information on the quality of the environment to the society.	l	IŚ_K06	T1A_K06; T1A_K07

Module content:

1. Topics to be covered in the lectures

No.	Topics	Module outcome code
1	Basic concepts as regards environmental monitoring. An outline of State Environmental Monitoring in Poland (its aims, organisational structure, and legal fundamentals). Environmental management system.	W_01,W_02,W_03 U_02 K_03
2	Information on the sources and loads of substances disposed to the environment. The register of dangerous waste. Measurement systems and techniques.	W_01,W_02,U_02, U_03, K_01 K_03
3	The monitoring of atmospheric air, the scope and scale of the conducted research, and acceptable air quality norms.	W_01,W_02, W_03,W_04 U_01, U_02, U_03 K_01, K_03
4	The monitoring of surface and underground water; the scope and scale of the conducted research, and acceptable water quality norms, and information on the needs of water management.	W_01,W_02, W_03, U_01 U_02, U_03 K_01, K_03
5	Soil monitoring. The sources of contaminations, the indicator of contaminations, the criteria of soil contamination assessment. Soil erosion and the causes of their generation.	W_01,W_02, W_03, U_01 U_02, U_03 K_01, K_03
6	Noise monitoring. Permissible levels. Noise emissions from industrial objects and municipal services.	W_01,W_02, W_03, U_01 U_02, K_03U_03 K_01,
7	Calculation methods concerning spreading pollution in the atmosphere. Statistical analysis of monitoring measurement data. The verification of statistical hypotheses.	W_02, W_03 K_03
8	A final test.	W_01,W_02, W_03, W_04,U_01 U_02, U_03 K_01,K_03, K_02

2. Topics to be covered in the classes
3. Topics to be covered in the laboratories

Assessment methods

Module outcome code	Assessment methods *(Method of assessment; for module skills – reference to specific project, laboratory and similar tasks)*
W_01	A test
W_02	A test
W_03	A test
W_04	A test
U_01	A test
U_02	A test
U_03	A test
K_01	A test
K_02	A test
K_03	A test

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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	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** *(total)*
10	**Number of ECTS credits for contact hours** *(1 ECTS credit =25-30 hours of study time)*	**0,64**
11	Private study hours: background reading for lectures	**6**
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**	9 *(total)*
21	**Number of ECTS credits for private study hours** *(1 ECTS credit =25-30 hours of study time)*	**0,36**
22	**Total study time**	**25**
23	**Total ECTS credits for the module** *(1 ECTS credit =25-30 hours of study time)*	**1**
24	**Number of practice-based hours** *Total practice-based hours*	
25	**Number of ECTS credits for practice-based hours** *(1 ECTS credit =25-30 hours of study time)*	

E. READING LIST

References	1. GIOŚ, the State Environmental Monitoring Program for 2016-2020, Environmental Monitoring Library Warsaw 2016 2. The publications of the series Library of Environmental Monitoring. Ed. GIOŚ 3. Reports on the state of the environment province. Świętokrzyskie arr. WIOŚ Kielce 4. Reports State of the Environment in Poland, BMS 5. Current regulations (www.gov.sejm.pl) 6. C. David Cooper. **Introduction to Environmental Engineering**. Waveland Press, 25 lip 2014

Module website	

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