



### MODULE SPECIFICATION

Module code	
Module title in Polish	<b>Hydrology – Applied</b>
Module title in English	<b>Hydrology – Applied</b>
Module running from the academic year	<b>2016/2017</b>

### A. MODULE IN THE CONTEXT OF THE PROGRAMME OF STUDY

Field of study	<b>Environmental Engineering</b>
Level of qualification	<b>first cycle</b> (first cycle, second cycle)
Programme type	<b>academic</b> (academic/practical)
Mode of study	<b>full-time</b> (full-time/part-time)
Specialism	All
Organisational unit responsible for module delivery	
Module co-ordinator	<b>Łukasz Bąk, PhD, Eng.</b>
Approved by:	<b>Tomasz Kozłowski, PhD hab., Professor of the University</b>

### B. MODULE OVERVIEW

Module type	<b>core module</b> (core/programme-specific/elective HES*)
Module status	<b>optional module</b> (compulsory/optional)
Language of module delivery	<b>Polish/English</b>
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	<b>None</b> (module code/module title, where appropriate)
Examination required	<b>No</b> (Yes/No)
ECTS credits	2

\* elective HES – elective modules in the Humanities and Economic and Social Sciences

Mode of instruction	lectures	classes	laboratories	project	others
---------------------	----------	---------	--------------	---------	--------



# Politechnika Świętokrzyska

**WYDZIAŁ INŻYNIERII ŚRODOWISKA, GEOMATYKI I ENERGETYKI**

Total hours per semester	15				
--------------------------	----	--	--	--	--



### C. LEARNING OUTCOMES AND ASSESSMENT METHODS

<b>Module aims</b>	The aim of the module is to repeat, consolidate, and broaden students' knowledge on hydrology (drawing particular attention to its application in the field of environmental engineering). The lectures are conducted in English, which enables learning and consolidating applicable vocabulary.
--------------------	---

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 has deepened and consolidated knowledge as regards hydrology and its application in environmental engineering.	I	IŚ_W12	T1A_W03, T1A_W04, T1A_W07
U_01	A student can obtain information from the literature on the subject and other sources; a student can also integrate the obtained information, interpret it, draw conclusions, and justify his/her opinions in English.	I	IŚ_U02	T1A_U01; T1A_U05 T1A_U07
U_02	A student has mastered the ability of communicating as well as reading with comprehension in a foreign language (together with the knowledge of the elements of technical language on hydrology).	I	IŚ_U06	T1A_U01; T1A_U02; T1A_U03 T1A_U04 T1A_U05; T1A_U06
K_01	A student is aware of the necessity to raise his/her professional and personal competences (including studying literature in a foreign language).	I	IŚ_K03	T1A_K01; T1A_K02 T1A_K04

#### Module content:

1. Topics to be covered in the lectures

No.	Topics	Module outcome code
1-2	Rainfall-runoff relationships: rainfall losses and how they can be measured, the response of rivers to rainfall events, the derivation and use of Unit Hydrographs, the derivation and use of S-curve hydrographs.	W_01 U_01 U_02 K_01
3-5	Reservoir design and reservoir flood routing: various types of reservoir and their uses, reservoir sizing techniques, techniques of sizing dam spillways, the hydrological factors governing dam safety, analytical techniques of undertaking flood routing calculations.	W_01 U_01 U_02 K_01
6-7	Storm water sewage systems: the types and function of sewers, design criteria for storm water sewers, the techniques for the design of storm water sewer systems	W_01 U_01 U_02 K_01

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

#### Assessment methods



Effect symbol	Methods of assessing teaching results (assessment method, including skills – reference to a particular project, laboratory assignments, etc.)
W_01	Obtaining a credit on the basis of a paper in English.
W_02	Obtaining a credit on the basis of a paper in English.
U_01	Obtaining a credit on the basis of a paper in English.
U_02	Obtaining a credit on the basis of a paper in English.
K_01	Obtaining a credit on the basis of a paper in English; participating in a discussion.

### 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)	5
5	Contact hours: participation in project-based classes	
6	Contact hours: meetings with a project module leader	
7	Contact hours: attendance at an examination	2
8		
9	<b>Number of contact hours</b>	<b>22</b> (total)
10	<b>Number of ECTS credits for contact hours</b> (1 ECTS credit = 25-30 hours of study time)	<b>0,88</b>
11	Private study hours: background reading for lectures	22
12	Private study hours: preparation for classes	
13	Private study hours: preparation for tests	
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	14
19		
20	<b>Number of private study hours</b>	(total)
21	<b>Number of ECTS credits for private study hours</b> (1 ECTS credit = 25-30 hours of study time)	
22	<b>Total study time</b>	
23	<b>Total ECTS credits for the module</b> (1 ECTS credit = 25-30 hours of study time)	
24	<b>Number of practice-based hours</b> Total practice-based hours	
25	<b>Number of ECTS credits for practice-based hours</b> (1 ECTS credit = 25-30 hours of study time)	

### E. READING LIST



# Politechnika Świętokrzyska

## WYDZIAŁ INŻYNIERII ŚRODOWISKA, GEOMATYKI I ENERGETYKI

References	<ol style="list-style-type: none"><li>1. Chow, V.T., Maidment, D.R. and Mays, L.W. (1988, 2nd Edition), Applied Hydrology, McGraw Hill, New York.</li><li>2. Linsley, R.K., Kohler, M.A. and Paulus, J.L.H. (1988), Hydrology for Engineers SI Edition, McGraw Hill, New York.</li><li>3. Shaw, E.M. (1994), Hydrology in Practice, Van Nostrand Reinhold, London.</li><li>4. Smart, P. and Herbertson, J.G. (eds), (1992), Drainage Design, Blackie, Glasgow.</li><li>5. Twort, A.C., Law, F.M. and Crawley, F.W. (1985), Water Supply 3rd Ed., Arnold, London.</li><li>6. Wilson, E.M. (1990), Engineering Hydrology, Macmillan, London.</li></ol>
Module website	