

MODULE SPECIFICATION

Module code	
Module title in Polish	Techniki Informacyjne
Module title in English	Information Technologies
Module running from the academic year	2016/2017

A. MODULE IN THE CONTEXT OF THE PROGRAMME OF STUDY

Field of study	Civil Engineering
Level of qualification	First cycle <i>(first cycle, second cycle)</i>
Studies profile	Academic <i>(academic/practical)</i>
Mode of study	Full-time <i>(full-time / part-time)</i>
Specialism	
Organisational unit responsible for module delivery	The Department of Applied Computer Science
Module co-ordinator	Paweł Stąpór, PhD, Eng.
Approved by	Marek Iwański, Professor

B. MODULE OVERVIEW

Module type	Core module <i>(core/programme-specific/elective HES*)</i>
Module status	Compulsory module <i>(compulsory / non-compulsory)</i>
Language of module delivery	English
Semester in the programme of study in which the module is taught	Semester 2
Semester in the academic year in which the module is taught	Summer semester <i>(winter / summer)</i>
Pre-requisites	None <i>(module code/module title, where appropriate)</i>
Examination required	No <i>(yes / no)</i>
ECTS credits	2

Mode of instruction	lectures	classes	laboratories	project	others
Total hours per semester	15		15		

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

C. LEARNING OUTCOMES AND ASSESSMENT METHODS

Module aims	The aim of the module is to broaden students' knowledge acquired during their secondary education in terms of the selected aspects of information technology, e.g. the elements of encrypting information, the elements of gathering and processing information, and the elements of programming.
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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 as regards general computer science (including technical methods of gathering, encrypting, and processing information, algorithm structure and programming).	l	B_W22	T1A_W02 T1A_W08
W_02	A student is familiar with the selected computer programs which support calculating and designing a construction.	l	B_W17	T1A_W01 T1A_W02 T1A_W05 T1A_W07
U_01	A student can apply mathematical methods and computational systems in solving typical engineering problems.	l	B_U01	T1A_U08 T1A_U09
U_02	A student can select appropriate information tools to solve tasks. Moreover, a student can formulate problems in order to solve them with the use of information tools.	l	B_U27	T1A_U11 T1A_U13
K_01	A student is aware of the necessity of raising his/her professional and personal competences. A student independently improves and broadens his/her knowledge.	l/l	B_K03	T1A_K01 T1A_K05 T1A_K06

Module content:

1. Topics to be covered in the lectures

No.	Topics	Module outcome code
1	Introduction: the essence of computer science. The elements of information encryption: numeral systems, information units, negative and real number record in the binary system.	W_01
2	Computer systems supporting engineering computations.	W_02
3	Introduction to programming: the stages of creating a program, programming languages. The concept of algorithm, block diagrams, the division of algorithms, and algorithm effectiveness. Summation and data sorting algorithms.	W_01
4,5	Introduction to numerical methods, the algorithms of sample numerical methods: solving the system of linear equations. Calculating function roots, numerical integration, approximation, and function interpolation.	W_01 U_01
6,7	Basic information on databases. A relational model of databases, a logic and physical diagram of databases, entity diagrams. Introduction to the SQL language.	W_01

2. Topics to be covered in the classes

No.	Topics	Module outcome code
1	Introduction to Excel, a sample solution of the data approximation task.	U_02
2	Sample application of Excel in the analysis of measurement statistical data.	U_01
3	Introduction to Mathcad, vector and matrix calculations in Mathcad.	U_01

4,5	Sample applications of Mathcad to solve linear and non-linear equations, calculating function roots, numerical integration, approximation, and function interpolation.	U_01
6,7	A project of the relational database, introduction to the SQL language.	U_02

3. Topics to be covered in the laboratories
4. Topics to be covered in the projects

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 W_02	A test
U_01 U_02	Completing tasks with the use of appropriate information tools.
K_01	Obtaining a credit.

C. 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	15
4	Contact hours: attendance at office hours (2-3 appointments per semester)	4
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	34 <i>(total)</i>
10	Number of ECTS credits for contact hours <i>(1 ECTS credit =25-30 hours of study time)</i>	1.3
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	2
15	Private study hours: writing reports	
16	Private study hours: preparation for a final test in laboratories	6
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	18 <i>(total)</i>
21	Number of ECTS credits for private study hours <i>(1 ECTS credit =25-30 hours of study time)</i>	0.7
22	Total study time	52

23	Total ECTS credits for the module <i>(1 ECTS credit =25-30 hours of study time)</i>	2
24	Number of practice-based hours <i>Total practice-based hours</i>	27
25	Number of ECTS credits for practice-based hours <i>(1 ECTS credit =25-30 hours of study time)</i>	1