



MODULE SPECIFICATION

Module code	
Module title in Polish	Podstawy Informatyki
Module title in English	The Fundamentals of Computer Science
Module running from the academic year	2016/2017

A. MODULE IN THE CONTEXT OF THE PROGRAMME OF STUDY

Field of study	Surveying and Cartography
Level of qualification	first cycle (first cycle, second cycle)
Programme type	academic (academic/practical)
Mode of study	full-time (full-time/part-time)
Specialism	All
Organisational unit responsible for module delivery	The Department of Applied Computer Science
Module co-ordinator	Paweł Stąpór, PhD, Eng.
Approved by:	Prof. Aleksander Oksanycz, PhD hab.

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 1
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	No (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
Total hours per semester	15		15		



C. LEARNING OUTCOMES AND ASSESSMENT METHODS

Module aims	The aim of the module is to broaden students' knowledge with respect to the selected information issues, such as: the elements of information encryption, 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 has knowledge as regards general computer science (including the on technical methods of gathering, encrypting, and processing information (as well as building algorithms and programming).	I	GiK_W04	T1A_W01, T1A_W05, T1A_W07, T1A_W10
W_02	A student knows basic methods, techniques, and tools applied while solving engineering tasks.	I	GiK_W27	T1A_W07
U_01	A student can consciously utilise computer software in data analysis and engineering computations.	I	GiK_U02	T1A_U01, T1A_U02, T1A_U03, T1A_U05, T1A_U07
U_02	A student can use databases.	I	GiK_U06	T1A_U02, T1A_U05, T1A_U07, T1A_U16
K_01	A student understands the necessity and knows the possibilities of continuous education as well as raising his/her competences.	II	GiK_K01	T1A_K01

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: numerical systems, information units, a record of negative and real numbers in the binary system.	W_01
2	Computer systems of supporting engineering calculations.	W_02
3	Introduction to programming: the stages of creating programs, programming languages. The concept of algorithm, block diagrams, the division of algorithms, and the effectiveness of algorithms. The algorithms of summing and sorting data.	W_01
4,5	Introduction to numerical methods, the algorithms of sample numerical methods: solving systems of linear equations, calculating the roots of functions, numerical integrating, function approximation and interpolation.	W_02
6,7	Basic information on databases. A relational model of databases, a logic and physical diagram of databases, and entity diagrams. Introduction to SQL language.	W_01

2. Topics to be covered in the laboratories

No.	Topics	Module outcome code
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1	Introduction to Excel, a sample solution to data approximation.	U_01
2	Sample applications of Excel in statistical analysis of measurement data.	U_01
3	Introduction to Mathcad; vector and matrix computations in Mathcad.	U_01
4,5	Sample applications of Mathcad for solving linear and non-linear equations; calculating the roots of a functions; numerical integration, function approximation and interpolation.	U_01
6,7	A project on a relational database, introduction to the SQL language.	U_02

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	Assessing tasks with the use of appropriate information tools.
K_01	Observing a student's involvement during the classes, a 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	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>(sum)</i>
10	Number of ECTS credits for contact hours <i>(1 ECTS credit = 25-30 hours of study time)</i>	1.36
11	Private study hours: background reading for lectures	4
12	Private study hours: preparation for classes	
13	Private study hours: preparation for tests	4
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	16 <i>(sum)</i>
21	Number of ECTS credits for private study hours <i>(1 ECTS credit = 25-30 hours of study time)</i>	0.64



22	Total study time	50
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

E. READING LIST

References	
Module website	