



MODULE SPECIFICATION

Module code	
Module title in Polish	Programowanie komputerowe
Module title in English	Computer Programming
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 Computer Science and Applied Mathematics
Module co-ordinator	Sławomir Koczubiej, PhD, Eng.
Approved by:	Prof. Czesław Cichoń, 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	English
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	None (module code/module title, where appropriate)
Examination required	Yes (Yes/No)
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	15		30		



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semester					
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C. LEARNING OUTCOMES AND ASSESSMENT METHODS

Module aims	On completing the course, students ought to be able to handle computer programs in a conscious manner (and independently create simple programs for Windows) as well as expansion modules for the existing applications.
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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 systematised knowledge as regards general and surveying computer science (including programming in the selecting languages) as well as program licences.	l/l	GiK_W04	T1A_W01, T1A_W05, T1A_W07, T1A_W10
W_02	A student is familiar with one basic programming language.	l/l	GiK_W23	T1A_W05 T1A_W07
W_03	A student has basic knowledge on intellectual property law.	l/l	GiK_W29	T1A_W08, T1A_W10
U_01	A student can prepare and modify functional software as regards surveying computer science.	l	GiK_U02	T1A_U01, T1A_U02, T1A_U03, T1A_U05, T1A_U07
U_02	A student can prepare and realise algorithms for solving a particular surveying problem.	l	GiK_U16	T1A_U08, T1A_U13
U_03	A student can create and realise procedures in a formal language with the use of programming tools.	l	GiK_U12	T1A_U07, T1A_U010
K_01	A student understands the necessity and knows the possibility of continuous education and raising his/her professional qualifications.	l/l	GiK_K01	T1A_K01
K_02	A student respects the principles of intellectual property protection.	l/l	GiK_K04	T1A_K02
K_03	A student can appropriately determine the priorities for the realisation of the determined (a student himself/herself or other students) task.	l/l	GiK_K08	T1A_K04

Module content:

1. Topics to be covered in the lectures

No.	Topics	Module outcome code
1	The process of programming, programming paradigms, algorithms, and the record of algorithms. .NET Framework platform.	W_01 W_02 W_03 K_01, K_02
2 - 6	Visual Basic NET (project structure). Types and variables, arrays and structures, and modifiers. Arithmetic and logic operators, arithmetic and logic expressions. Instructions and declarations. The assignment statement and conditional instruction. Loop instructions. MATH functions.	W_01 W_02
7 - 8	Forms and controls, features and events. The control of program realisation. Structural and	W_01,



	non-structural error handling.	W_02 K_03
9 - 13	Work with huge data sets. Text, defined, and binary files. Processing files.	W_01, W_02,
14, 15	Visual Basic for Applications in programs. Programming macros in Excel and Access.	W_01, W_02 W_03

2. Topics to be covered in the laboratories

No.	Topics	Module outcome code
1 - 2	Visual Basic .NET (introduction). The fundamentals of programming, console applications, control instructions, and variables. Arithmetic operators, entering data, computing and presenting results.	W_01, W_02, W_03 K_03
3 - 6	Array variables, classes and objects, procedures and functions. Programs for calculating length, azimuth, and an angle from coordinates. Using a multiple conditional instruction.	W_01, W_02, U_01 U_02, U_03, K_03
7	A test – an independent completion of a simple computational program.	W_01, W_02, W_03 U_01 U_02, U_03, K_02 K_03
8 - 12	Graphical user interface. Reading and recording on text files. Realising computational programs for general or surveying data (with the use of an independently prepared algorithm).	W_01, W_02, U_01 U_02, U_03, K_03
13 - 14	Introduction to programming in Visual Basic for Applications, working environment, and macros. The examples of computational algorithms. Processing text files (general or surveying data).	W_01 W_02, W_03, U_01 U_02, U_03,
15	A final test.	W_01, W_02, W_03 U_01 U_02, U_03, K_02 K_03

Assessment methods



Politechnika Świętokrzyska

WYDZIAŁ INŻYNIERII ŚRODOWISKA, GEOMATYKI I ENERGETYKI

Module outcome code	Assessment methods <i>(Method of assessment; for module skills – reference to specific project, laboratory and similar tasks)</i>
U_01, U_02, U_03	Completing program supervised by the academic teacher.
W_01, W_02, W_03	A twofold test on creating programs which realise surveying calculations.
K_01, K_02, K_03	Observing a student's involvement during the classes; a discussion during the classes; consulting algorithms realising surveying data.



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	30
4	Contact hours: attendance at office hours (2-3 appointments per semester)	3
5	Contact hours: participation in project-based classes	
6	Contact hours: meetings with a project module leader	2
7	Contact hours: attendance at an examination	
8		
9	Number of contact hours	50 <i>(sum)</i>
10	Number of ECTS credits for contact hours <i>(1 ECTS credit = 25-30 hours of study time)</i>	2
11	Private study hours: background reading for lectures	15
12	Private study hours: preparation for classes	
13	Private study hours: preparation for tests	
14	Private study hours: preparation for laboratories	25
15	Private study hours: writing reports	
16	Private study hours: preparation for a final test in laboratories	10
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	50 <i>(sum)</i>
21	Number of ECTS credits for private study hours <i>(1 ECTS credit = 25-30 hours of study time)</i>	2
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>	70
25	Number of ECTS credits for practice-based hours <i>(1 ECTS credit = 25-30 hours of study time)</i>	2.8

E. READING LIST

References	
Module website	