



MODULE DESCRIPTION

Module code	full-time studies:	Z-ZIP1-E-508a
	part-time studies:	Z-ZIPN1-E-508a
Module name	Programming Languages – C++	
Module name in Polish	Języki programowania – C++	
Valid from academic year	2019/2020	

MODULE PLACEMENT IN THE SYLLABUS

Field of study	MANAGEMENT AND PRODUCTION ENGINEERING
Level of education	1st degree
Studies profile	General
Form and method of conducting classes	Full-time and Part-time
Specialisation	All
Unit conducting the module	Department of Computer Science Technologies
Module co-ordinator	Marzena Nowakowska, PhD, DSc
Approved by:	

MODULE OVERVIEW

Type of subject / group of subjects	Major
Module status	Non-compulsory
Language of conducting classes	English
Module placement in the syllabus - semester	Semesetr V
Initial requirements	No requirements
Examination (YES/NO)	NO
Number of ECTS credit points	3

Method of conducting classes		Lecture	Classes	Laboratory	Project	Other
Per semester	full-time studies:	15		30		
	part-time studies:	9		18		

TEACHING RESULTS AND THE METHODS OF ASSESSING TEACHING RESULTS

Category	Symbol	Learning outcomes	Assignations to the directional learning outcomes
Knowledge	W01	A student knows and understands the principles of functioning of computer programs and managing them in Windows environment.	ZIP_W05
	W02	A student has basic knowledge as regards data types and selecting those types to solve a specific programming task.	ZIP_W05
	W03	A student understands a modular structure of a computer program and the need of utilizing built-in functions of the BCB environment and his/her own programmer's functions.	ZIP_W05
Skills	U01	A student is able to design and build a window application using ready objects of the BCB programming system as well as his/her own programming solutions.	ZIP_U07
	U02	A student is able to make the analysis of a simple source code as well as to introduce modifications in the code of an existing program.	ZIP_U07
	U03	A student has the ability of defining his/her own programmer's functions as well as utilising them in a computer application created by him/her.	ZIP_U07
	U04	A student has the skills of elaborating algorithms to solve various programming tasks according to the principles of universal logic.	ZIP_U07
Social competences	K01	A student understands the necessity of continuous usage and enrichment of his/her knowledge as regards algorithmic operations.	ZIP_K01
	K02	A student is able to work individually and in a group (by accepting diverse roles).	ZIP_K04

TEACHING CONTENTS

Method of conducting classes	Teaching contents
Lecture	<p>The IDE of the Borland C++ Builder system. Program structure in the C++ programming language. Application structure in BCB. Creating a source code. Component palette, communication of an application with a user. Basic language statements. Simple data types. Selected operators, their precedence and operational sequence. The algorithms of iterative processing. Arrays and loop statements. Pointer types. Pointer and dereference operators. Address arithmetic. Working with arrays. Control in the program using the loop statements. Defining functions and passing parameters to them. The elements of objective programming – using some example BCB components. The properties and methods of a class as tools used when utilising objects in a computer program. The AnsiString class: properties and methods. Text processing; TMemo and TString classes. Organising the access to a text file using dialogue components. The co-operation of an application with a text file. The role of the TString class in data transmission between the application and the text file.</p>

Laboratory	<p>The structure of a project in the Borland C++ Builder (BCB) system. Communicating an application with a user. Standard object chart in BCB. Data type conversion and arithmetic operations. Control in a computer program.</p> <p>The sequence of statement execution within a computer program. Calculation algorithms. Iterative processing. Implementing calculation algorithms in the BCB application. Arrays and loop statements: calculating statistics from numerical arrays.</p> <p>Iterative array processing using the TStringGrid class to enter data and derive results. User function as a class component and as an external function. Global variables. Passing function parameters.</p> <p>String processing: the AnsiString class. Iterative text processing: statistics, searching and modifying texts.</p> <p>Organising access to text files. Data transmission between disk and main memory (array structures and visual form components). Creating applications co-operating with a text file.</p>
------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

METHODS OF ASSESSING TEACHING RESULTS

Symbol	Methods of checking the learning outcomes (select X)					
	Oral exam	Written exam	Test	Project	Statement	Other
W01			X			X
W02			X			X
W03			X			X
U01			X			X
U02			X			X
U03			X			X
U04			X			X
K01						X
K02						X

FORM AND CONDITIONS OF PASSING

Form of classes	Form of credit	Passing conditions
Lecture	Credit with grade	Obtaining at least 50% of the points in the final test.
Laboratory	Credit with grade	Obtaining at least 50% of the points from the colloquia during the classes.

STUDENT WORKLOAD

Balance of ECTS points												
No.	Type of student's activity	Student's workload										Unit
		full-time					part-time					
1.	Participation in the activities	Lc	C	Lb	P	O	Lc	C	Lb	P	O	h
		15		30			9		18			
2.	Other (consultation, exam)	2		2			2		2			h
3.	Number of hours of a student's as- sisted work	49					31					h
4.	Number of ECTS credit points which are allocated for assisted work	2,0					1,2					ECTS
5.	Number of hours of a student's un- assisted work	26					44					h
6.	Number of ECTS credit points which a student receives for unassisted work	1,0					1,8					ECTS
7.	Work input connected with practical classes	50					50					h
8.	Number of ECTS credit points which a student receives for practical classes	2,0					2,0					ECTS
9.	Total number of hours of a stu- dent's work	75					75					h
10.	Punkty ECTS za modul <i>1 ECTS=25 hours</i>	3										ECTS

LITERATURE

1. Gregorie M., (2021), *Professional C++, 5th Edition*, John Wiley and sons Ltd..
2. Stroustrup B. (2022), *A tour of C++*, Pearson.
3. Stroustrup B. (2013), *The C++ Programming Language*, Addison-Wesley.
4. Swart B., Cashman M., Gustavson P., Hollingworth J., *Borland C++Builder 6 Developer's Guide*, SAMS, available from: http://140.129.118.16/~richwang/ktlan/BCPPB6_Book_unlocked.pdf.
5. A student can find the information in the Internet for the key phrases: *C+ builder tutorials*, *programming in C++*.