

MODULE DESCRIPTION

Madula anda	full-time studies:	Z-ZIP1-E-210				
	part-time studies:	Z-ZIPN1-E-210				
Module name	Fundamentals of Computers Science					
Module name in Polish	Podstawy informatyki					
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	Sławomir Koczubiej, PhD
Approved by:	

MODULE OVERVIEW

Type of subject / group of subjects	Major
Module status	Compulsory
Language of conducting classes	English
Module placement in the syllabus - semester	Semester II
Initial requirements	Information Technologies
Examination (YES/NO)	NO
Number of ECTS credit points	3

Method of c	onducting classes	Lecture	Classes	Laborato- ry	Project	Other
Per	full-time studies:	15		30		
semester	part-time studies:	9		18		

Category	Symbol	Learning outcomes	Assignations to the directional learning out- comes
	W01	A student knows the basic computational and data pro- cessing algorithms.	ZIP1_W05
	W02	A student has a basic knowledge of simple and complex data types (array, list, file, object).	ZIP1_W05
Knowledge	W03	A student has a basic knowledge of the syntax, grammar and instructions of the selected programming language, its basic library and built-in functions.	ZIP1_W05
	W04 A student has a basic internet applications.	A student has a basic knowledge of modern web and internet applications.	ZIP1_W04 ZIP1_W05
	W05	A student has a basic knowledge of application software for scientific and engineering calculations (CAS)	ZIP1_W04 ZIP1_W05
	U01 A student is able to implement simple algori programming language.		ZIP1_U07 ZIP1_U14
Skills	Skills He can solve basic problems in the field of mathematic analysis, financial mathematics, algebra, basics of statics, present the results of calculations in a graphical form using the mathematical and statistical calculation package. U03 Can use technical documentation, textbooks and online resources to expand his knowledge of programming languages and computing packages.	ZIP1_U07 ZIP1_U14	
		Can use technical documentation, textbooks and online resources to expand his knowledge of programming languages and computing packages.	ZIP1_U07 ZIP1_U14
Social competences	K01	Is ready to work in a team while solving common tasks. Interacts with other team members at various stages of problem solving	ZIP1_K04

TEACHING RESULTS AND THE METHODS OF ASSESSING TEACHING RESULTS

TEACHING CONTENTS

Method of conducting classes	Teaching contents
	Introduction to programming. Semantics and syntax of a programming language. Algebraic and logical expressions. Input / output instructions. The process of translat- ing and starting the program.
	Data representation in computer memory. Basic data types: numeric, character, enumerated, other. Simple control statements: conditional and selection. Iterative control statements - loops.
Lecture	Using built-in language functions and libraries. Writing programs with own proce- dures and functions. Passing parameters to subroutines. Variable scope. File type Supports various types of files (text, binary).
	Computer aided engineering calculations - CAS software (Computer Algebra System). Introduction to the selected software
	5. Numerical and symbolic calculations in the field of mathematical analysis, algebra and statistics in the selected CAS system. System communication with text disk files.

Laboratory	 Defining simple algorithms, writing in various notations (eg in the form of a network of actions). Simple data types (numeric, character). Variables, operators and expressions. Assignment instruction. Communication with the user: input / output instructions. Control statements: conditional and selection statements. Converting data types. Using library and built-in functions. Iterative control statements - loops. Programming with the use of the array type and derived types. Defining your own functions and procedures. Variable scope. Parameters of procedures and functions and ways of their transfer. Programming with the use of text and binary files. Application software of CAS type - environment, notation of arithmetic expressions and basic functions. Generating graphs of functions 6. CAS software. Operations on vectors and matrices. Solving equations, systems of equations, inequalities. Statistical analysis.
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METODS OF ASSESSING TEACHING RESULTS

Symbol		Methods	s of checking (se	he learning outcomes act X)						
	Oral exam	Written exam	Test	Project	Statement	Other				
W01			Х							
W02			Х							
W03			Х							
W04			Х							
W05			Х							
U01			Х							
U02			Х							
U03			x							
K01						Х				

FORM AND CONDITIONS OF PASSING

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

STUDENT WORKLOAD

Balance of ECTS points												
No	Type of student's activity		Student's workload									Unit
NO.	Type of student's activity		fu	II-tin	ne			ра	rt-tir	ne		Onit
1	Barticipation in the activities		С	Lb	Р	0	Lc	С	Lb	Ρ	0	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 moduł 1 ECTS=25 hours		3						ECTS			

LITERATURE

- 1. Heineman G., Learning Algorithms: A Programmer's Guide to Writing Better Code, O'Reilly Media, 2021.
- Louridas P., Algorithms, The MIT Press, 2020.
 Faster L., Python Essentials, Independently published (Amazon), 2021.
 Kumar S., Practical Data Analysis, Packt Publishing, 2016.