1.	Field of study	Mathematics
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	General information about the module

Module name	**Elements of Programming**
Module code	W4-MT-S1-25-EProg
Number of the ECTS credits	3
Language of instruction	Polish
Purpose and description of the content of education	Celem modułu Elementy programowania jest nauczenie programowania w jednym wybranym języku programowania. W ramach tego modułu przewiduje się realizację następujących treści programowych: 1) Elementy programowania w języku algorytmicznym wysokiego poziomu: - środowisko programistyczne, - instrukcje warunkowe i iteracyjne, - pojęcie rekurencji, - podział programu na procedury lub funkcje, tworzące czytelną strukturę, - pojęcie i przeznaczenie zmiennej: globalnej i lokalnej, - pojęcie parametrów procedur i funkcji, mechanizm przekazywania parametrów, - operacje na plikach tekstowych. 2) Wybrane algorytmy klasyczne: - rozkład liczby na czynniki pierwsze, - algorytm Euklidesa, - znajdowanie najmniejszego lub/i największego elementu w zbiorze, - wyszukiwanie elementu w zbiorze uporządkowanym, - obliczanie wartości wielomianu - schemat Hornera, - wybrane algorytmy sortujące (przez wstawianie, przez wybieranie, bąbelkowe),
List of modules that must be completed before starting this module (if necessary)	not applicable

8.	Learning outcomes of the module

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
EProg_01	The student knows the syntax of a selected higher-level programming language and knows the paradigms of structured and procedural programming.	K_W06	2
EProg_02	he uses: different types of variables, input/output instructions, arithmetic and logical operators, conditional and iterative instructions	K_U08 K_U09	5 5

EProg_03	knows basic algorithms and algorithmic techniques (iteration and recursion) and knows and discusses situations in which classic algorithms are used	K_W06	5
EProg_04	can implement the discussed algorithms	K_U08	5
		K_U09	5
EProg_05	uses a compiler or interpreter of a selected programming language; uses a selected programming environment to save, run and test a program	K_U08	5
EProg_06	knows the properties of fixed-point and floating-point notation and is aware of various types of errors occurring in numerical calculations, knows the basic positional number systems	KN_I_W08	5

9.	Methods of conducting classes	
Code	**Category**	**Name (description)**
c07	Demonstration methods	Screen presentation *a presentation of synthetic image content using computer graphics, e.g., a series of slides or other multimedia forms, usually accompanied by a commentary; typical components of a screen presentation include text organized into bulleted points, charts, images and animations, sometimes sound effects or music; a multimedia illustration of course content presented in the form of a projected image*
d01	Programmed learning methods	Working with a computer *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*
d02	Programmed learning methods	Working with a programmed textbook *working with a textbook containing instructional material covering part of or the entire curriculum of the module as well as a formula for studying the content; includes working with a subject textbook, an atlas, a catalogue, a problem book, etc.*

10.	Forms of teaching				
Code	**Name**	**Number of hours**	**Assessment of the learning outcomes of the module**	**Learning outcomes of the module**	**Methods of conducting classes**
01	laboratory classes	45	course work	EProg_01, EProg_02, EProg_03, EProg_04, EProg_05, EProg_06	c07, d01, d02

11.	The student's work, apart from participation in classes, includes in particular:		
Code	**Category**	**Name (description)**	**Is it part of the BUNA?**
a01	Preparation for classes	Search for materials and review activities necessary for class participation *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	Yes
a02	Preparation for classes	Literature reading / analysis of source materials *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	Developing practical skills *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent*	Yes

		elements of the curriculum (as preparation for class participation)	
b01	Consulting the curriculum and the organization of classes	Getting acquainted with the syllabus content *reading through the syllabus and getting acquainted with its content*	Yes
b02	Consulting the curriculum and the organization of classes	Verification / adjustment / discussion of syllabus provisions *consulting the content of the syllabus, possibly in the presence of the year tutor or members of the class group, and, if necessary, reassessing the provisions concerning special conditions for class participation, e.g., space and time requirements, technical and other requirements, including conditions for participation in classes outside the walls of the university, classes organized in blocks, organized online, etc.*	Yes
c01	Preparation for verification of learning outcomes	Determining the stages of task implementation contributing to the verification of learning outcomes *devising a task implementation strategy embracing the division of content, the range of activities, implementation time and/or the method(s) of obtaining the necessary materials and tools, etc.*	Yes
c02	Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.