STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Introduction to programming**		Code **1010341711010349406**
Field of study **Mathematics in Technology**	Profile of study (general academic, practical) **(brak)**	Year /Semester **1 / 1**
Elective path/specialty **-**	Subject offered in: **Polish**	Course (compulsory, elective) **obligatory**
Cycle of study: **First-cycle studies**	Form of study (full-time,part-time) **full-time**	

No. of hours				No. of credits **4**
Lecture: **30** Classes: **-** Laboratory: **30** Project/seminars: **-**				

Status of the course in the study program (Basic, major, other) **(brak)**	(university-wide, from another field) **(brak)**

Education areas and fields of science and art	ECTS distribution (number and %**)**
technical sciences	**4 100%**
Technical sciences	**4 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Basic knowledge with range of secondary school.
2	**Skills**	Computer skills. The ability to effectively self-education in a field related to the chosen field of study.
3	**Social competencies**	Knowledge of the limits of their knowledge and understanding of the need for further education.

Assumptions and objectives of the course:

Familiarize students with the concepts of algorithm and program/script. Learn how to design, write, and to prove the correctness of algorithms.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Know the basics computational techniques and programming, supporting the work of mathematician and understand their limitations. - [[K_W05]]

2. He knows the ways of the application of mathematical methods in selected areas of science, technical and economic. - [[K_W09]]

Skills:

1. Recognizes problems, including practical issues that can be solved algorithmically; He can make the specifications of this problem, place, position and analyze the algorithm in accordance with the specifications and save it in the selected programming language, is able to compile, run and test independently written computer program. - [[K_U14]]

2. Apply the rules of safety and health at work.   - [[K_U27]]

Social competencies:

1. Knows limitations of their knowledge and understands the need for further education. - [[K_K01]]

Assessment methods of study outcomes

- evaluation of knowledge acquired in the lecture

- skills assessment related to the implementation of project tasks

- evaluation of student preparation for classes and laboratory evaluation of skills related to the implementation of laboratory exercises

- evaluation of reports

- evaluation of team skills

Course description

- Introduction to algorithms

- Introduction to programming

- Defining the syntax and semantics of expressions

- Representation of numbers

- Syntax and semantics of instruction

- Correctness of programs/scripts

- Files

- Dynamic memory

- Functions

- Recursion

Update 2017:

Applied methods of education:

Lectures:

Lecture with multimedia presentation (including: drawings, photos) supplemented by examples given on the board,

Lecture conducted in an interactive way of formulating questions to a group of students or indicated specific students,

Student activity is taken into account during the course of the assessment,

The initiating of discussion during the lecture,

Theory presented in connection with practice,

Theory presented in connection with the current knowledge of students,

Taking into consideration various aspects of the presented issues,

Presenting a new topic preceded by a reminder of related content known to students from other subjects;

Laboratories:

Laboratories supplemented with multimedia presentations (including drawings, photos)

Detailed review of the reports by the teacher and discussion of the comments,

Demonstrations,

Work in teams,

Computational experiments;

Basic bibliography:

1. Ćwiczenia z Matlab : przykłady i zadania; Anna Kamińska, Beata Pańczyk, Warszawa : Wydaw. MIKOM, 2002.

2. MATLAB : środowisko obliczeń naukowo-technicznycH; Jerzy Brzózka, Lech Dorobczyński, Warszawa : Wydaw. MIKOM, 2005.

Additional bibliography:

1. MATLAB : dla naukowców i inżynierów; Rudra Pratap, Warszawa : Wydawnictwo Naukowe PWN, 2015.

Result of average student's workload

Activity	Time (working hours)
1. participation in lectures (15x2 hrs.)	30
2. participation in laboratory classes (15x2 hrs.)	30
3. participation in the consultations related to the implementation of the education process, in particular laboratory / project	10
4. completion (within own work) reports on laboratory exercises	5
5. write a program / programs, commissioning and verification (time outside of the classroom laboratory)	15
6. preparation for laboratory exercises	15
7. preparation for tests / test	5
8. read with the specified literature / teaching materials	5

Student's workload		
Source of workload	**hours**	**ECTS**
Total workload	120	4
Contact hours	70	2
Practical activities	75	3