



COURSE DESCRIPTION CARD- SYLLABUS

Course name

Programming I

Course

Field of study

Mathematics in Technology

Area of study (specialization)

—

Level of study

first-cycle studies

Form of study

full-time

Year/Semester

1/2

Profile of study

general academic

Course offered in

Polish

Requirements

compulsory

Number of hours

Lectures

15

Tutorials

—

Laboratory classes

30

Projects/seminars

—

Other (e.g. online)

—

Number of credit points

4

Lecturers

Responsible for the course/lecturer::

dr inż. Karol Gajda

Responsible for the course/lecturer::

—

Prerequisites

The student starting this subject should have knowledge and skills of the course Introduction to Programming and Information Technologies from the first semester. Should know the limits of their own knowledge and understand the need for further education.

Course objective

Presentation of programming techniques and data structures used in small and medium scale programming.



Course-related learning outcomes

Knowledge

- has extended and in-depth general knowledge of various branches of higher mathematics, including theorems and proofs, and advanced detailed knowledge about the application of mathematical techniques, methods and tools in engineering and technical sciences;
- has deepened and theoretically founded knowledge of computer science, including numerical methods; knows at least one software package or a programming language in detail.

Skills

- can construct an algorithm for solving a complex engineering task or a simple research problem and implement and test it in a selected programming environment;
- is able to use equipment and tools, in accordance with general requirements and technical documentation; knows how to apply the principles of health and safety at work;
- is able to independently acquire knowledge and develop professional skills, independently designs the path of education and consistently strives to implement it, as well as is able to orient others in this regard.

Social competences

- is aware of the level of his knowledge in relation to research in technical sciences;
- is aware of the deepening and expanding knowledge to solve new technical problems.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Knowledge acquired during the lecture is verified by a 45-minute colloquium consisting of variously scored questions (test and open). Passing threshold: 50% of points. Final issues on the basis of which questions are prepared will be forwarded to students during the lecture preceding the colloquium, or sent by e-mail using the university's e-mail system. Skills acquired as part of the laboratory are verified on the basis of developed projects and final test. Passing threshold: 50% of points.

Programme content

Update: 10.09.2020r.

- The basic elements of Java language:
 - data types;
 - variables;
 - operators;
 - strings;
 - input and output;



- controlling the program execution;
- big numbers;
- tables;

- Objects and classes.

- Inheritance.

Teaching methods

Lectures:

- lecture with presentation supplemented with examples given on the board;
- a lecture conducted in an interactive manner with formulating questions to a group of students or to specific students indicated;
- students' activity during classes is taken into account when issuing the final mark;
- during the lecture initiating the discussion;
- theory presented in close connection with practice;
- theory presented in connection with the current knowledge of students;
- presenting a new topic preceded by a reminder of related content known to students in other subjects.

Laboratory classes:

- laboratories supplemented with multimedia presentations (including: drawings, photos, animations, sound, films);
- detailed reviewing of reports by the laboratory chair and discussions on comments;
- using tools that enable students to perform tasks at home (eg open source software);
- demonstrations;
- work in teams;
- computational experiments.

Bibliography

Basic

- Cornell, C. Horstmann, Java Podstawy, Wydanie XI, [Core Java Volume i – Fundamentals (11th Edition)], Helion, 2019.
- Sedgewick, K. Wayne Programowanie w języku Java : podejście interdyscyplinarne, Wydanie II, [Introduction to Programming in Java: An Interdisciplinary Approach (2nd Edition)], Helion, 2018.

Additional

- Eckel, Thinking in Java. Edycja polska, Helion 2009.



Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,0
Classes requiring direct contact with the teacher	50	2,0
Student's own work (literature studies, preparation for laboratory, preparation for tests, project preparation)	50	2,0