



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Fundamentals of computer science

### Course

Field of study

Technical Physics

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

1/1

Profile of study

general academic

Course offered in

polish

Requirements

compulsory

### Number of hours

Lecture

15

Laboratory classes

15

Other (e.g. online)

Tutorials

Projects/seminars

### Number of credit points

3

### Lecturers

Responsible for the course/lecturer:

dr inż. Michał Hermanowicz

Responsible for the course/lecturer:

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tel. 61 665 32 10

### Prerequisites

Knowledge of the basics of PC operation

Support for a PC with any operating system

Ability to work individually, active attitude when solving problems

### Course objective

The aim of the course is to prepare students to work with software used in the academic environment. In particular, students learn about data processing and analysis (measurement and other) with particular emphasis on their representation on two- and three-dimensional charts, as well as the basics of programming in interpreted and compiled languages. The software used includes the GNU / Linux operating system, Bash, sed, gnuplot, vim, and more. In addition, students learn about the LaTeX typesetting system, including the creation of basic types of documents (articles, studies, presentations



and diploma theses) necessary in engineering and scientific practice. The subject is preparation for classes in the following semesters of the 1st and 2nd degree of education.

### Course-related learning outcomes

#### Knowledge

1. Knowledge of operating systems [K1\_W05]
2. Knowledge of data processing [K1\_W05]
3. Basics of programming [K1\_W05]
4. Basics of document editing and composition [K1\_W05]

#### Skills

1. Support for a PC computer with the GNU / Linux operating system installed.
2. Use of software: Bash, sed, gnuplot, vim and others, including creating and running shell scripts, as well as using compilers from the GCC [K1\_U10] package.
3. Creation of shell scripts allowing for processing and formatting of data sets (measurement and other) for their graphic presentation [K1\_U19].

#### Social competences

1. Is aware of improving his IT competences [K1\_K03]

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: final test.

Laboratory exercises: test of practical skills with the use of computer and software.

### Programme content

1. GNU / Linux operating system and its support; basic types of computer software licenses,
2. processing of data sets, their formatting and methods of graphical presentation on  
and three-dimensional,
3. Bash shell support and its basic instructions, input / output operations and methods of redirection
4. writing scripts of interpreted languages (on the example of Bash shell, gnuplot, sed, etc.) in the vim text editor,
5. creating basic types of documents in the LaTeX text composition system.

### Teaching methods

1. Lecture: multimedia presentation, presentation illustrated with examples given on the blackboard.



2. Laboratory exercises: practical exercises, performing experiments, discussion, team work.

### Bibliography

Basic

1. Autorskie materiały dydaktyczne udostępniane studentom w formie elektronicznej
2. Dokumentacja wykorzystywanego oprogramowania

Additional

1. William Stallings, Organizacja i architektura systemu komputerowego, WNT

### Breakdown of average student's workload

	Hours	ECTS
Total workload	80	3,0
Classes requiring direct contact with the teacher	35	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	45	2,0

<sup>1</sup> delete or add other activities as appropriate