COURSE DESCRIPTION CARD - SYLLABUS

Course name
Data processing basics [S1AiR2>PPD]

Course

Field of study
Automatic Control and Robotics

Year/Semester
1/1

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
0

Laboratory classes
15

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

2,00

Coordinators

mgr inż. Dominik Pieczyński
dominik.pieczynski@put.poznan.pl

Lecturers

mgr inż. Piotr Zacholski
piotr.zacholski@put.poznan.pl

dr inż. Bartosz Ptak
bartosz.ptak@put.poznan.pl

mgr inż. Kamil Młodzikowski
kamil.mlodzikowski@put.poznan.pl

mgr inż. Marcel Koczorowski
marcel.koczorowski@put.poznan.pl

mgr inż. Mikołaj Zieliński
mikolaj.zielinski@put.poznan.pl

mgr inż. Rafał Staszak
rafal.staszak@put.poznan.pl

mgr inż. Przemysław Aszkowski
przemyslaw.aszkowski@put.poznan.pl

Prerequisites

Knowledge: The student beginning this subject has a basic knowledge of the principles of computer hardware. Skills: The student can efficiently operate a PC, independently search for information and use

the indicated sources of knowledge. The student has basic knowledge of linear algebra, statistics and probability.

Course objective

The course aims to familiarize students with the basics of programming and data processing in Python.

Course-related learning outcomes

Knowledge:
1. Has an advanced level of structured knowledge of selected algorithms and data structures and procedural and object-oriented programming methodologies and techniques [K1_W8](P6S_WG)

Skills:
1. Can develop a solution to a simple engineering task and implement, test and run it in a selected programming environment on a PC for selected operating systems [K1_U26(P6S_UW)]
2. Can obtain information from literature, databases, and other sources, also in a selected foreign language [K1_U1(P6S_UW)]
Social competencies
1. Is ready to critically evaluate his/her knowledge; understands the need for and knows the possibilities of continuous education - improving professional, personal and social competence, can inspire and organize the learning process of others [K1_K1(P6S_KR)]

Social competences:
-

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Laboratories - ongoing control of individually performed programming tasks and evaluation of the final practical project or credit colloquium.

Programme content

Fundamentals of programming and data handling and processing in the Python programming language.

Course topics

1. Input/output operations in the Python language. Data types and basic mathematical operations.
2. Elements of object-oriented programming in Python.
3. Text data processing in the Python language.
4. Numerical data processing using NumPy and pandas libraries.
5. Visualization of data in Python language.
6. Image handling in Python language.

Teaching methods

Individual implementation of programming tasks according to the provided instructions and guidelines, joint discussion of difficult issues, and analysis of example variants of solutions.

Bibliography

Basic:
1. Course materials, published online, on eKursy
2. Python Crash Course / Eric Matthes, Helion, 2024

Additional:
1. Python Data Science Handbook / Jake VanderPlas, Helion, 2024

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	15	0,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	35	1,50