COURSE DESCRIPTION CARD - SYLLABUS

Course name
Information technology [S1AiR2>TI]

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
30

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

Knowledge: Knowledge of mathematics and computer science at the secondary school level (PRK4) Skills: Ability to use a foreign language at the level of B1 CEFR (P40_UJ), ability to use moderately complex mathematical tools (PRK-P40_UM), ability to plan learning according to own advancements in the training program taking into account development perspectives (PRK-P40_UU) Social competences: Compliance with ethics and communication labels (PRK-P30_KJ)

Course objective

1. Providing students with knowledge of information technologies in the field of their use in automation and robotics. 2. Developing students' skills to solve problems related to the use of information technologies.

Course-related learning outcomes

Knowledge:
1. Has basic knowledge in the field of IT tools for rapid prototyping, simulation and visualization of

automation and robotics systems and systems [K1_W10]
2. Knows the methods, techniques and programming tools used to solve simple engineering tasks in the field of automation and robotics; [K1_W23]

Skills:
1. Can communicate using various techniques in a professional environment and in other environments [K1_U3]
2. Is able to use information and communication techniques for data analysis using Matlab and Python [K1_U8]

Social competences:
1. Is ready to critically assess knowledge, understands the need and knows the possibilities of continuous training - raising professional, personal and social competences [K1_K1]
2. Is ready to fulfill social obligations, co-organize activities for the social environment; is aware of the social role of a technical university graduate and understands the need to formulate and convey to the public (in particular through the mass media) information and opinions on the achievements of automation and robotics and other aspects of engineering activities; endeavors to provide such information and opinions in a generally understandable way; [K1_K7]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes can be verified by: assessing the current progress, assessing prepared reports, or through test during or at the end of the semester.

Programme content

The classes discuss knowledge in the field of operation and use of IT tools intended for rapid prototyping and design, simulation and visualization of automation and robotics systems and systems. Methods, techniques and programming tools used to solve simple engineering tasks in the field of automation and robotics as well as data analysis are also presented.

Course topics

Topics:
1. Dealing with IT environments used in administration as well as in stationary and remote teaching of students; in particular: USOS, ekursy, emeeting.
2. LaTeX package: introduction to the environment, document structure, compilation, packages necessary for writing documents in Polish, basic commands and surroundings, mathematical formulas, tables and drawings, tables of contents, presentations.
3. Matlab language: introduction to environment using this language, basic commands and operators of operations / relations, indexing and clippings from matrices, for loops, conditional expressions, scripts, functions, generating charts, saving data in files.
4. Python language: introduction to the environment using this language, basic data types, basic commands / operators of operations / relations, indexing and clippings from collections, loops, conditional expressions, scripts, functions, matrix calculations with the NumPy module, graph visualization with the Matplotlib module, saving data in files.
5. Basics of graphical programming environment for prototyping automation systems.

Teaching methods

Laboratory classes, practical exercises, discussion, analysis of results.

Bibliography

Basic:
1. Materials provided by the lecturer
2. Introduction to the LaTeX package: https://ctan.org/tex-archive/info/lshort/polish?lang=en
3. Documentation of individual LaTeX packages: www.ctan.org
4. Materials regarding the MATLAB package: https://mathworks.com/help/index.html
5. LaTeX documentation: www.ctan.org/tex-archive/info/lshort/english/

6. Python language documentation: https://www.python.org/doc/

Additional:
LaTeX: A Document Preparation System (2nd Edition) - Leslie Lamport
MATLAB i Simulink : poradnik użytkownika - Autor: Mrozek, Bogumiła
Learning Python - Mark Lutz

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	20	1,00