COURSE DESCRIPTION CARD - SYLLABUS

Course name
Mobile and humanoid [S1Mech2>RMiH]

Course

Field of study
Mechatronics

Year/Semester
4/7

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
elective

Number of hours

Lecture
15

Laboratory classes
30

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

3,00

Coordinators

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Lecturers

Prerequisites

Knowledge: Basic knowledge of robot construction, electric drives, PLC controller programming, Skills: Ability to read technical drawings and electrical diagrams.

Course objective

Learning about the basic types of mobile and humanoid robots. Learning about the structure and principles of operation of these robots.

Course-related learning outcomes

Knowledge:
1. Familiarization with the construction of mobile and humanoid robots
2. Familiarization with the principles of operation of mobile robots,
3. Familiarization with the principles of operation of humanoid robots,
4. Analysis of selected drives used to build mobile and humanoid robots,

Skills:
1. Using IT tools to design mobile robots and humanoid robots,

2. Designing a simple mobile robot,
3. Designing a simple humanoid robot,
4. Designing a robot control system: mobile and humanoid.

Social competences:
1. Understands the need for lifelong learning; is able to inspire and organize the learning process of others,
2. Is able to set priorities for the implementation of a task defined by himself or others
3. Is able to cooperate and work in a group, assuming different roles in it.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Knowledge acquired during the lecture is verified by means of an exam in the form of a test (approx.
20 questions). Passing threshold 50%
Laboratory: Passing based on an oral or written answer regarding the content of each laboratory exercise performed, a report from each laboratory exercise according to the guidelines specified in the exercise guide and the instructions of the laboratory exercise instructor. To obtain a pass in the laboratories, all exercises must be passed (positive grade from the answers and report)

Programme content

Development and forecast of the mobile robot market; Application areas of mobile robots; Modern mobile robots and trends in their development; Construction of mobile, humanoid robots; principles of designing robots (mobile, humanoid and smart); principles of designing humanoid robots; development and forecast of the humanoid robot market

Course topics

1. Familiarization with the structure and principles of operation of mobile robots,
2. Familiarization with the structure and principles of operation of humanoid robots,
3. Control systems in robots: mobile, humanoid
4. Principles of designing mobile, humanoid robots
5. Selection of sensors used in mobile, humanoid robots
6. Designing the mechanical structure of a mobile robot
7. Designing the control system of a mobile robot,
8. Selection of measuring sensors for a mobile robot,
9. Proposing a program to support the movement of a mobile robot,
10. Designing the structure of a humanoid robot,
11. Designing the control system of a humanoid robot.

Teaching methods

1. Lecture: multimedia presentation, presentation illustrated with examples given on the board, discussion and analysis of problems. 2. Laboratory exercises: practical exercises, solving tasks, discussion, team work

Bibliography

Basic:
1. Szkodny T., Podstawy robotyki, WPŚ, Gliwice, 2011
2. Honczarenko J., Roboty przemysłowe. Budowa i Zastosowanie, WNT, Warszawa, 2010.
3. Żurek J., Podstawy Robotyzacji - Laboratorium., WPP, Poznań, 2006

Additional:
. Dinwiddie K., Industrial Robotics, Cengage Learning, 2018, ISBN-13: 978-1133610991

Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,00
Classes requiring direct contact with the teacher	45	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	30	1,00