COURSE DESCRIPTION CARD - SYLLABUS

Course name
Master thesis [S2AiR1E-ISLiSA>PM]

Course

Field of study
Automatic Control and Robotics

Year/Semester
2/3

Area of study (specialization)
Smart Aerospace and Autonomous Systems

Profile of study
general academic

Level of study
second-cycle

Course offered in
English

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
0

Laboratory classes
0

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

15,00

Coordinators

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Lecturers

Prerequisites

Knowledge: The student starting this subject should have basic knowledge, skills and competences acquired in the earlier years of study, enabling him to complete his master's thesis. Skills: A student starting this subject should have basic knowledge, skills and competences acquired in the earlier years of study, enabling him to complete his master's thesis. Social competencies: In addition, in terms of social competences, the student must present attitudes such as honesty, responsibility, perseverance, cognitive curiosity, creativity, personal culture, respect for other people.

Course objective

The main goal is for students to carry out specific scientific research or a complex project in the field of automation and robotics and to prepare a master's thesis

Course-related learning outcomes

Knowledge
1. has extended knowledge within selected areas of robotics; - [K2_W10]
2. has knowledge of development trends and the most important new achievements in the field of automation and robotics and related scientific disciplines - [K2_W12]

3. has a basic knowledge of the life cycle of automation and robotics systems as well as control and measurement systems; - [K2_W13]
4. has knowledge of running a business, engineering project management and quality management; - [K2_W15]
5. knows and understands the basic concepts and principles of intellectual property and copyright protection. Is able to use the resources of patent information; - [K2_W16]
Skills
1. can critically use literature information, databases and other sources in Polish and a foreign language; - [K2_U1]
2. is able to analyze and interpret technical design documentation and use scientific literature related to a given problem; - [K2_U2]
3. is able to prepare a scientific study in the mother tongue and a short scientific report in English, presenting the results of own research; - [K2_U4]
4. has self-education skills in order to raise and update professional competences; - [K2_U6]
5. is able to simulate and analyze the operation of complex automation systems as well as plan and carry out experimental verification; - [K2_U9]
6. can formulate and verify (simulating or experimentally) hypotheses related to engineering tasks and simple research problems in the field of automation and robotics; - [K2_U15]
7. can assess the usefulness and the possibility of using new achievements in the field of automation and robotics (techniques and technologies); - [K2_U16]
8. can design improvements (improvements) of the existing design solutions for automation and robotics elements and systems - [K2_U20]
9. is able to identify elements and control systems and formulate a design specification of a complex control system, taking into account non-technical aspects; - [K2_U21]
10. can critically evaluate and select appropriate methods and tools to solve a task in the field of automation and robotics; can use innovative and unconventional tools in the field of automation and robotics and shape the dynamic properties of measurement paths; - [K2_U22]
11. is able to design and implement a complex device, object or system, taking into account non-technical aspects; - [K2_U23]
Social competences
1. understands the need and knows the possibilities of continuous training, improving professional, personal and social competences, is able to inspire and organize the learning process of other people; - [K2_K1]
2. is aware of the importance and understands the non-technical aspects and effects of engineering activities, including its impact on the environment, and the related responsibility for the decisions made; - [K2_K2]
3. is aware of the need for a professional approach to technical issues, scrupulous reading of the documentation and the environmental conditions in which the devices and their components may function; - [K2_K4]
4. is aware of the social role of a technical university graduate and understands the need to formulate and transmit to the society (in particular through the mass media) information and opinions on the achievements of automation and robotics in the field of research and application work and other aspects of engineering activities; - [K2_K6]
5. endeavors to provide such information and opinions in a commonly understandable manner with justification from different points of view; - [K2_K6]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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Summative assessment:
Checking the assumed learning outcomes is carried out by:
1. continuous assessment, through the students' report on the progress of work related to the implementation of the diploma thesis;
2.assessment of the increase in the ability to use the learned principles and methods,
3. evaluation of reports prepared on selected issues carried out within the framework of the project? this assessment may also include the ability to work in a team, if the work is carried out as a team;
4. Assessment of the project results: does the product meet the requirements? does the product have a friendly interface? quality of documentation and timely implementation of individual tasks?

Programme content

The subject of the master's thesis is most often the implementation of a research or project-implementation project defined by the thesis supervisor. The project is carried out under the supervision of a supervisor or a promoter and a supervisor appointed by the promoter. This task may be to design, implement and implement a system in the field of automation and robotics based on the indicated technologies or solution (including implementation and tests) of a research problem.
A well-run project should be based on a recognized project implementation methodology, and the progress of implementation should be shown with appropriate indicators, models and effects. The end result of the project is a report (publication) on the implementation of scientific research, working prototype or fully functional software, ready for implementation. Additionally, the project's appendix is its technical and operational documentation.

Course topics

none

Teaching methods

1. consultations on implemented projects, workshops - discussions on the presented diploma projects

Bibliography

Basic

Additional

Breakdown of average student's workload

	Hours	ECTS
Total workload	450	15,00
Classes requiring direct contact with the teacher	40	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	410	13,00