COURSE DESCRIPTION CARD - SYLLABUS

Course name
Preparation of the thesis

Course

Field of study
Automatic Control and Robotics

Year/Semester
2/3

Area of study (specialization)
Vision systems

Profile of study
general academic

Level of study
Second-cycle studies

Course offered in
polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
0

Laboratory classes
0

Other (e.g. online)
0

Tutorials
0

Projects/seminars
30

Number of credit points

20

Lecturers

Responsible for the course/lecturer:
thesis supervisor

prof. dr hab. inż. Adam Dąbrowski
e mail: adam.dabrowski@put.poznan.pl

tel. -5932

Faculty of Automatic Control, Robotics and
Electrical Engineering

ul. Piotrowo 3, 60-965 Poznań

Responsible for the course/lecturer:

Prerequisites

Knowledge: The student starting this subject should have basic knowledge related to the selected topic of the master's thesis in the field of automation and robotics and know the basic methods, techniques and tools used in solving tasks in this field.

Social competences: The student must present attitudes such as honesty, responsibility, perseverance, cognitive curiosity, creativity, personal culture, respect for other people.

Skills: The student should have the ability to solve basic problems in the selected field and integrate knowledge from various areas of computer science and the ability to obtain information from the indicated sources. He should also understand the need to expand his competences.

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

A student:

1. has an extended knowledge of selected areas of automation and 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 the protection of intellectual property and copyright. Can use the resources of patent information [K2_W16]

Skills

A student:

1. is able to critically use literature information, research data and other sources in Polish and a foreign language [K2_U1]

2. is able to analyze and interpret technical design documentation and use the scientific literature related to a given problem [K2_U2]

3. can 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 and robotics systems as well as plan and carry out experimental verification - [K2_U9]

6. is able to formulate and verify (simulation or experimentally) hypotheses related to engineering tasks and simple research problems in the field of automation and robotics [K_U15]

7. is able to assess the usefulness and the possibility of using new achievements in the field of automation and robotics (techniques and technologies) [K_U16]

8. is able to design improvements (improvements) to the existing design solutions of automation and robotics elements and systems [K_U20]

9. can identify elements and control systems and formulate a design specification of a complex control system, taking into account non-technical aspects [K_U21]

10. is able to critically assess and select appropriate methods and tools for solving tasks 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 [K_U22]

11. is able to design and implement a complex device, object or system, taking into account non-technical aspects [K_U23]

12. is able to build an algorithm for solving a complex and unusual engineering task and a simple research problem and implement, test and run it in a selected programming environment for selected operating systems - [K2_U25]

Social competences

A student:

1. understands the need and knows the possibilities of continuous training, improving professional, personal and social skills, can 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 decisions made [K2_K2]

3. is aware of the need for a professional approach to technical issues, meticulous reading of the documentation and environmental conditions in which the devices and their components can 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 works and other aspects of engineering activities [K2_K6]

5. Make efforts to provide such information and opinions in a commonly understandable manner with justification of various points of view [K2_K6].

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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 under 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 execution 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 supervisor and a supervisor appointed by the supervisor. This task may include designing, implementing and implementing 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.

Teaching methods

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

Bibliography

Basic

Additional

Breakdown of average student's workload

	Hours	ECTS
Total workload	500	20,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for exam, project preparation) [1]	470	19,0

[1] delete or add other activities as appropriate