

Elements of Automation - course description

General information

Course name	Elements of Automation
Course ID	06.9-WM-ER-BHP-43_18
Faculty	Faculty of Mechanical Engineering
Field of study	WM - oferta ERASMUS
Education profile	-
Level of studies	Erasmus programme
Beginning semester	winter term 2018/2019

Course information

Semester	2
ECTS credits to win	3
Course type	obligatory
Teaching language	english
Author of syllabus	• dr inż. Piotr Gawłowicz, prof. UZ

Classes forms

The class form	Hours per semester (full-time)	Hours per week (full-time)	Hours per semester (part-time)	Hours per week (part-time)	Form of assignment
Lecture	15	1	-	-	Credit with grade
Laboratory	15	1	-	-	Credit with grade

Aim of the course

The main result of this course is to know the automation and robotization of technological processes.

Prerequisites

Fundamentals of physics, electrical engineering, electronics and computer science.

Scope

Basics of automation. Control and control systems. Regulators. Stability of automatic control systems. Application of industrial automatic control systems and manipulators and robots in the technological processes of production of materials, machine elements and machine assembly processes. Computer-aided design systems for automated and robotized technological processes.

Teaching methods

Lecture, laboratory.

Learning outcomes and methods of theirs verification

Outcome description	Outcome symbols	Methods of verification	The class form
The student is able to perform laboratory exercises in the group according to the instruction, cooperate with other members and work taking different roles in the group.	• Activity during the class. Current control in class. Observation and assessment of activity in the classroom.	• Laboratory	• Laboratory
The student has basic knowledge of commonly used objects and systems of automation of drives and electronic components, knows the cycle of their design, manufacture, use and disposal. Student knows the basic methods, techniques, tools and materials used to solve simple engineering tasks in the field of automation and robotization of industrial processes.	• Test	• Lecture	• Lecture
Student can, while formulating and solving engineering tasks related to industrial automation, integrate knowledge in other fields of science and disciplines appropriate to the studied field of study and apply a systemic approach, including non-technical aspects. The student is able to plan and conduct experiments using measuring devices such as electrical value meters, oscilloscopes, computer control and measurement cards, computer simulations, interpret the results and draw conclusions. Student can use to formulate and solve engineering tasks using simulation methods using specialized computer programs and using previously designed experiments. Student is able to perform critical analysis of how the automation system works and assess existing technical solutions, in particular devices, objects, systems and processes. Student can assess the suitability of many different methods and tools for solving automation and robotics engineering tasks and choose the most suitable and practical applications.	• Activity during the class. Current control in class. Observation and assessment of activity in the classroom. Test	• Laboratory	• Laboratory

Assignment conditions

The final grade is the average of the lab and the lecture, provided they receive both positive grades.

Recommended reading

1. Barczyk J.: Automatyzacja procesów dyskretnych, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2003.
2. Kwiecień R.: Komputerowe systemy automatyki przemysłowej, Helion, Gliwice, 2013.
3. Mikulczyński T.: Automatyzacja procesów produkcyjnych, WNT, Warszawa, 2006.
4. Szafarczyk M., Śniegulska-Grądzka D., Wypisiński R., Podstawy układów sterowań cyfrowych i komputerowych, PWN, Warszawa, 2007.
5. Urbaniak A.: Podstawy automatyki, Wydawnictwo Politechniki Poznańskiej, Poznań, 2004.
6. Zdanowicz R., Robotyzacja dyskretnych procesów produkcyjnych, Wydawnictwo Politechniki Śląskiej, Gliwice, 2009.

Further reading

1. Brzózka J.: Regulatory i układy automatyki, MIKOM, Warszawa, 2004.
2. Elementy automatyzacji we współczesnych procesach wytwarzania, praca zbiorowa pod redakcją Mieczysława Marciniaka, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2007.
3. Kozłowski K., Dutkiewicz P., Wróblewski W.: Planowanie zadań i programowanie robotów, Wydawnictwo Politechniki Poznańskiej, Poznań, 1999.
4. Podstawy robotyki. Teoria i elementy manipulatorów i robotów. Praca zbiorowa pod redakcją Adama Moreckiego i Józefa Knapczyka, WNT, Warszawa, 1999.
5. Zawadzka L.: Współczesne problemy i kierunki rozwoju elastycznych systemów produkcyjnych, Wydawnictwo Politechniki Gdańskiej, Gdańsk, 2007.
6. Zdanowicz R., Robotyzacja procesów technologicznych, Wydawnictwo Politechniki Śląskiej, Gliwice, 2002.

Notes

Modified by dr inż. Piotr Gawłowicz, prof. UZ (last modification: 24-04-2018 12:46)

Generated automatically from SylabUZ computer system