

Course title: **CONTROL SYSTEMS**

ECTS credit allocation (and other scores): **5**

Semester: autumn

Level of study: ISCED-6 - first-cycle programmes (EQF-6)

Branch of science: Natural sciences

Language: English/Polish

Number of hours per semester: 30 lectures + 30 classes = 60 hours

Course coordinator/ Department and e-mail: Erasmus coordinator Anna Szczepkowska/ WMil,
erasmuswmii.uwm.edu.pl

Type of classes: classes and lectures

Substantive content

CLASSES:

Minimization of combinational control functions. Designing basic combinational control circuits. Designing basic sequence control systems. Record of basic control systems in LAD. Delay systems in control systems. Fundamentals of PLC programming. Basic elements of control systems in PLC technology. The use of subroutines and interrupts in PLC control systems. Hardware functions of drivers

LECTURES:

Introduction to Automatic Control. Minimization of combinational control functions. Designing basic control combination circuits. Designing basic sequence control systems. Delay systems in control systems. Microprocessors and microcontrollers. Programming of microcontrollers. Communication of the microcontroller with external devices. Peripherals of embedded devices. Embedded systems in control systems.

Learning purpose:

The aim of the course is to study the applications of computer science and control algorithms.

On completion of the study programme the graduate will gain:

Knowledge:

The student has in-depth, theoretically founded knowledge of theories and control systems.

Skills:

The student can design an algorithm to control a machine, device or industrial process and to code it in a practical way in ladder language using PLC controllers.

Social Competencies:

The student understands the need for lifelong learning, can inspire and organize the learning process of other people.

Basic literature:



1. D. Kania, *Układy logiki programowalnej. Podstawy syntezy i sposoby odwzorowania technologicznego*, Wyd. Wydawnictwo Naukowe PWN, R. 2012
2. G. Mrugalski, A. Pogiel, J. Tyszer, *Technika cyfrowa. Zbiór zadań z rozwiązaniami*, Wyd. BTC, R. 2016
3. T. Łuba, G. Borowik, *Synteza logiczna*, Wyd. OWPW, R. 2015
4. J. Pasierbiński, P. Zbysiński, *Układy programowalne w praktyce*, Wyd. W.K.Ł., R. 2005

Supplementary literature:

1. D. Bismor, *Programowanie systemów sterowania. Narzędzia i metody*, Wyd. Wydawnictwo Naukowe PWN, R. 2018
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The allocated number of ECTS points consists of:

Contact hours with an academic teacher: 2.6 ECTS points

Student's independent work: 2.4 ECTS points