## STUDY MODULE DESCRIPTION FORM

| Name of the module/subject **Automated Production Systems** | | Code **1011101361010556783** |
|---|---|---|
| Field of study **Logistics - Full-time studies - First-cycle studies** | Profile of study (general academic, practical) **(brak)** | Year /Semester **3 / 6** |
| Elective path/specialty **-** | Subject offered in: **Polish** | Course (compulsory, elective) **elective** |

| Cycle of study: **First-cycle studies** | Form of study (full-time,part-time) **full-time** |
|---|---|

| No. of hours Lecture: **15**   Classes: **-**   Laboratory: **15**   Project/seminars: **-** | No. of credits **2** |
|---|---|

| Status of the course in the study program (Basic, major, other) **(brak)** | (university-wide, from another field) **(brak)** |
|---|---|

| Education areas and fields of science and art | ECTS distribution (number and %**)** |
|---|---|

### Responsible for subject / lecturer:

dr inż. Marcin Kiełczewski
email: marcin.kielczewski@put.poznan.pl
tel. 616652848
Wydział Informatyki
ul. Piotrowo 3, 60-965 Poznań

### Prerequisites in terms of knowledge, skills and social competencies:

| 1 | **Knowledge** | Basic information from linear algebra, Boolean algebra, information technologies and basics of programming |
|---|---|---|
| 2 | **Skills** | Acquiring information from literature and technical documentation (also in English), team work, application of IT tools |
| 3 | **Social competencies** | Awareness of hazards during work with mechanical and electrical devices, a sense of responsibility for the safety of other people |

### Assumptions and objectives of the course:

Presentation of theoretical and practical knowledge in the field of production automation and robotics.

### Study outcomes and reference to the educational results for a field of study

**Knowledge:**

1. The student has a basic knowledge of automation and industrial robotics. - [K1A_W06]

2. Has basic knowledge of the construction of industrial manipulators and automation and control systems - [K1A_W07]

**Skills:**

1. The student can independently develop a simple problem within the scope of automated production systems  - [K1A_U05]

2. He can use the methods he has learned to formulate and solve a set design task within the scope of automated production systems  - [K1A_U09]

3. He can perceive their non-technical and organizational aspects when formulating and solving engineering tasks  - [K1A_U10]

**Social competencies:**

1. The student is aware of the need to learn throughout life and to inspire and organize the learning process of others - [K1A_K01]

2. He is willing to cooperate and work in a group in order to solve set tasks - [K1A_K03]

### Assessment methods of study outcomes

- Forming evaluation:

a) in terms of the lecture: based on the answers to questions about the material discussed in previous lectures,

b) in the scope of the laboratory: based on the assessment of the current progress of laboratory tasks.

- Summary rating:

a) in the scope of the lecture: on the basis of a test of theoretical knowledge from the lecture material,

b) in the scope of the laboratory: based on the assessment of completed laboratory tasks and prepared reports.

## Course description

The concept of automation, automatic control system (URA), exemplary systems, elements and classification of URA, technological process monitoring tools, SCADA systems. Regulators: regulator tasks, types and properties of regulators, two and three-point controllers, PID continuous controllers, selection of controllers' settings by selected techniques. Basic concepts of robotics, types and general construction of robots, tasks of industrial robots, coordinate systems, location representation, manipulator kinematics, systems and programming languages ??of manipulators on the example of robots KUKA and Staubla. Construction and operation of programmable logic PLC controllers, controller operation cycle, controller input and output systems, programming languages, basics of programming in ladder language. Construction and operating principle of selected sensors and measuring devices used in automation and robotics.


Teaching methods:

Lecture - informative and conversational lecture

Laboratory - laboratory method

## Basic bibliography:

## Additional bibliography:

## Result of average student's workload

| Activity | Time (working hours) |
|---|---|
| 1. Lectures | 15 |
| 2. Laboratory | 15 |
| 3. Consultation | 3 |
| 4. Preparation for laboratory | 10 |
| 5. Preparation for the exam | 7 |

## Student's workload

| Source of workload | hours | ECTS |
|---|---|---|
| Total workload | 50 | 2 |
| Contact hours | 33 | 1 |
| Practical activities | 15 | 1 |