Poznan University of Technology
**Faculty of Transport Engineering**

**E**uropean **C**redit **T**ransfer **S**ystem

## STUDY MODULE DESCRIPTION FORM

| Name of the module/subject | Code |
|---|---|
| **Automation and Monitoring of Machines** | **1010645211010640335** |

| Field of study | Profile of study (general academic, practical) | Year /Semester |
|---|---|---|
| **Mechanical Engineering** | **(brak)** | **1 / 1** |

| Elective path/specialty | Subject offered in: | Course (compulsory, elective) |
|---|---|---|
| **Industrial Mechatronics** | **Polish** | **obligatory** |

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

| No. of hours | | | | No. of credits |
|---|---|---|---|---|
| Lecture: **9** Classes: **-** Laboratory: **9** Project/seminars: **-** | | | | **2** |

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

| Education areas and fields of science and art | ECTS distribution (number and %**)** |
|---|---|
| **technical sciences** | **2   100%** |

### Responsible for subject / lecturer:

PhD Eng. Jan Górecki
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tel. 61 665 2053
Transport Engineering
ul. Piotrowo 3, 61-139 Poznań

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

| 1 | **Knowledge** | Basic knowledge of the use of PLC controllers and HMI screens in thought and programming methods acquired during previous classes in the specialty, Basic knowledge of electronics, automation and information technology acquired during the first-cycle studies |
|---|---|---|
| 2 | **Skills** | Programming of PLC controllers in a basic level, PC class support; use English to the extent that enables understanding technical texts; obtaining information from literature, the Internet, databases and other sources; can search in catalogs and on the websites of manufacturers of ready-made machine components for use in own projects. |
| 3 | **Social competencies** | Ability to work in a group and awareness of responsibility for the results of group work, Ability to define priorities for the implementation of the task undertaken. |

### Assumptions and objectives of the course:

To acquaint students with the communication protocols used in industrial machines and the controllers used to manage the work of the actors of these devices

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

#### Knowledge:

1. He has broadened knowledge in the field of computer science, programming computers and programs for engineering calculations in the field of computer simulation of physical systems - [M2_W05]

#### Skills:

1. He can advise on the selection of machines for the production line within the machine group covered by the specialty.  - [M2_U14]

#### Social competencies:

1. Is ready to critically evaluate your knowledge and content you receive - [M2_K01]

### Assessment methods of study outcomes

EXAM: A pass on the basis of an exam consisting of 10 general-purpose one-choice questions (for the correct answer to each question: 1 point. Grading: below 0 ÷ 4 points? Ndst., 5? Dst, 6 points? Dst +, 7 pts. db, 8 pts. db +, 9 pts? bdb).

Laboratory: Credit based on the correct performance of the exercises and the colloquium carried out on the last laboratory exercises as indicated by the laboratory instructor. In order to pass the laboratories, all exercises must be passed and a positive grade must be obtained from the colloquium.

### Course description

1. Types of communication protocols,

2. Modbus protocol,

3. Profibus DP protocol,

4. Application of regulators,

5. Methods of communication in industrial networks between HMI screens and regulators,

6. configuration of regulators,

7. Examples of practical use of acquired knowledge

**Basic bibliography:**

**Additional bibliography:**

### Result of average student's workload

| Activity | Time (working hours) |
|---|---|
| 1. Participation in lectures | 8 |
| 2. Consultation of lecture content | 2 |
| 3. Participation in exercise classes | 8 |
| 4. Preservation of lecture contentConsultation of the content of the classes | 2 |
| 5. Preparation of the final work | 10 |
| 6. Preparation for the exam | 5 |
| 7. Participation in the exam | 1 |
| 8. Defense of the developed group project | 1 |
| 9. Preservation of lecture content | 6 |
| 10. Strengthening the content of exercise classes | 6 |

### Student's workload

| Source of workload | hours | ECTS |
|---|---|---|
| Total workload | 49 | 2 |
| Contact hours | 22 | 1 |
| Practical activities | 0 | 0 |