



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Visualization and production monitoring systems [S1ZiIP2>SWiNP]

### Course

Field of study	Year/Semester
Management and Production Engineering	3/6
Area of study (specialization)	Profile of study
–	general academic
Level of study	Course offered in
first-cycle	Polish
Form of study	Requirements
full-time	elective

### Number of hours

Lecture	Laboratory classes	Other
15	15	0
Tutorials	Projects/seminars	
0	0	

### Number of credit points

2,00

### Coordinators

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### Lecturers

### Prerequisites

Basics of automation, basics of programming, basics of machine technology.

### Course objective

To acquaint students with tools and software for creating and configuring operator interfaces, for bench monitoring of machines and production lines, based on HMI panels and SCADA systems.

### Course-related learning outcomes

Knowledge:

student has a general knowledge of the automation and robotization of production processes, including the structure of numerical control and automatic regulation. Has knowledge of steering and control of manufacturing processes. Has a basic knowledge of the architecture of computer systems and computer-aided engineering work.

Skills:

Basic-level design of the HMI and machine monitoring and control interface.  
Basic knowledge of information systems used in the enterprise.

Social competences:

The student is aware of the role of automation in modern economy and its importance for society and the environment

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### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Credit based on a written test consisting of 3-4 general questions in the subject (Assignment of grades to percentage ranges of results: <90-100> very good; <80-90) good plus; <70-80) good; <60-70) satisfactory plus; <50-60) satisfactory; <0-50) unsatisfactory)

Laboratory: Credit based on the assessment of the final task carried out by the subgroup containing the content discussed in the subject.

### Programme content

Tools and software for creating and configuring operator interfaces, for bench monitoring of machines and production lines, based on HMI panels and SCADA systems.

### Course topics

Model of IT systems in an enterprise. Data transfer in industrial and internet networks. Data sources in the automation system (sensors, controllers, drives, etc.). Introduction to techniques for visualizing the control process based on specialized software and HMI panels. Overview of how to create and manage user windows, define and use variables. Recommendations and errors in building the visualization. Learning about user interface objects. Working with alarms and events. Historical data collection systems and their analysis.

### Teaching methods

Lectures, supported by transparencies and multimedia presentations

Laboratory: Topics carried out simultaneously in groups on didactic positions and a mini evaluation project using the previously acquired knowledge.

### Bibliography

Basic:

1. Kwaśniewski J., Sterowniki PLC w praktyce inżynierskiej, Wydawnictwo BTC, Legionowo 2008.
2. Kwiecień R., Komputerowe systemy automatyki przemysłowej, Wydawnictwo Helion, Gliwice 2013.
3. Wonderware Intouch- Podręcznik użytkownika, Praca zbiorowa, Invensys systems

Additional:

1. Terminal HMI serii NQ - Instrukcja obsługi, Omron
2. Siemens S7-1200 Pierwsze kroki, Siemens

### Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	20	1,00