



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Remote monitoring of machines [S1Mech2>ZNM]

Course

Field of study
Mechatronics

Year/Semester
4/7

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
elective

Number of hours

Lecture
15

Laboratory classes
30

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

3,00

Coordinators

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Lecturers

Prerequisites

The student starting this subject should have basic knowledge of PLC programming and electrical signal standards. They should also have the ability to obtain information from indicated sources and be willing to cooperate within a team.

Course objective

Acquiring students' skills in designing, configuring and implementing visualization in automation.
Developing students' skills in programming, documenting and reading technical documentation, practical use of knowledge acquired during studies, shaping students' teamwork skills.

Course-related learning outcomes

Knowledge:

1. Knows the principles of description, principles of operation of machines, devices and electrical systems.
2. Can use IT tools necessary in engineering practice.
3. Knows the principles of mechatronic design

Skills:

1. Ability to program PLC controllers
2. Ability to select automation elements
3. Ability to configure selected HMI panels
4. Ability to critically analyze the functioning of the created visualization
5. Ability to obtain technical information

Social competences:

1. Understands the need for lifelong learning; can inspire and organize the learning process of others
2. Can identify priorities for the implementation of a specific task
3. Can interact and work in a group
4. Can think and act in an entrepreneurial manner
5. Is aware of responsibility for his own work and readiness to submit to the principles of teamwork and responsibility for jointly performed tasks

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Laboratory: Assessment based on correct performance of exercises and a report from each laboratory exercise according to the instructions of the laboratory instructor. Development of your own visualization.

Assessment of the lecture based on a written assessment.

Programme content

PLC Programming Basics
PLC Visualization
MapView Visualization
JS Basics
Microcontroller Visualization

Course topics

Lecture:

1. Programming PLC controllers
2. Visualization on operator panels
3. mapView visualization
4. JavaScript - basics
5. JavaScript - basics
6. Visualization on microcontrollers
7. Vue JS visualization

Laboratory:

1. Introduction to classes
- 2 - 3. Visualization on B&R controllers
4. mapView visualization part 1 - Creating a visualization template
- 5-6. mapView visualization part 2 - Variables, units, translation
- 7-8. mapView visualization part 3 - Images, logging, events and actions
9. mapView visualization part 4 - DialogBox, MessageBox, chart
10. SceneViewer
11. JavaScript basics
- 12-13. Visualization on microcontrollers
- 14-15. Developing your own visualization

Teaching methods

Lecture: multimedia presentation and software usage demonstration

Laboratory: Exercises performed by students in groups under the supervision of the instructor

Bibliography

Basic:

1. J. Hawrylak, Języki programowania sterowników PLC: LAD, FBD, SCL, STL. Ćwiczenia dla początkujących, Wydawnictwo Helion
2. K. Korpysz, P. Obstawski, R. Sałat, Wstęp do programowania sterowników PLC, Wydawnictwa Komunikacji i Łączności WKŁ

Additional:

1. S. Plamowski A. Wojtulewicz, Systemy DCS i SCADA, Oficyna Wydawnicza Politechniki Warszawskiej

Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,00
Classes requiring direct contact with the teacher	45	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	30	1,00