COURSE DESCRIPTION CARD - SYLLABUS

Course name

Design of measurement systems in electric power engineering

Course

Field of study

Electrical engineering

Year/Semester

2/4

Area of study (specialization)

High Voltage Engineering

Profile of study

general academic

Level of study

Second-cycle studies

Course offered in

Polish

Form of study

part-time

Requirements

compulsory

Number of hours

Lecture

Laboratory classes

Other (e.g. online)

Tutorials

Projects/seminars

20

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

dr hab. inż. Krzysztof Walczak

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tel. 61 665 2797

Faculty of Environmental Engineering and Energy

Piotrowo 3a Str., 60-965 Poznań

Responsible for the course/lecturer:

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tel. 61 665 2035

Faculty of Environmental Engineering and Energy

Piotrowo 3a Str., 60-965 Poznań

Prerequisites

Student has basic knowledge of electrical engineering, power engineering and digital metrology of basic physical quantities.

Student can use a personal computer in solving engineering tasks. Student is able to present the results of their work. Student is able to work in a team.

Student understands the importance of teamwork

Course objective

Understanding the LabVIEW graphical programming environment. Creating applications that support the device and measuring card. Getting to know the basics of creating measurement systems and expert in electrical power systems

Course-related learning outcomes

Knowledge

Student can design and make the application in LabView environment that allows for the registration and processing of the signals recorded by the measuring systems for monitoring of typical power equipment

Skills

Student can design computer applications designed to monitor the work of electrical equipment. Student can propose measurement-diagnostic solutions to increase the reliability of work of electrical equipmen The student is able to propose improvements to the existing measurement system solutions.

Social competences

Student can think and act in a creative way to improve reliability of power device work.

Student understands the need for continuous improvement of knowledge in order to solve engineering problems more effectively.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Project exercise:

- continuous evaluation, on each course

- rewarding skills gain in the range of use of the principles and methods have met during the course,

- assessment of knowledge and skills related to the implementation of the project, the assessment of project work effects and its presentation.

Programme content

Classes include the following topics:

introduction to programming in LabVIEW graphical environment, way to prepare an application in a graphical programming environment, operations on arrays, strings, files, the use of structures, graphs, local and global variables, signal processing methods, support for signal acquisition cards and measurement equipment connected by standard interfaces or network, use the advanced features of signal acquisition and processing, the basics of creating complex measurement and expert systems. Development of measurument systems with the use of NI MyRIO controller.

Teaching methods

PROJECT - teamwork, analysis/discussion of various methods (including unconventional) of solving a problem

Bibliography

Basic

1.Tłaczała W.: Środowisko LabVIEW w eksperymencie wspomaganym komputerowo, Wydawnictwo PWN, 2017

2.Maj P., Wirtualne systemy kontrolno-pomiarowe, Wydawnictwa AGH, 2011.

3. Świsulski D.: Komputerowa technika pomiarowa Oprogramowanie wirtualnych przyrządów pomiarowych w LabView, Wydawnictwo PAK, Warszawa, 2005.

4. Chruściel M.: LabVIEW w praktyce, Wydawnictwo BTC, 2008.

5. Wirth N., Algorytmy + struktury danych = programy, WNT, 2004

Additional

1. Doering E., NImyRIO Project Essentials Guide, National Instruments 2013

2. Tumański S., Technika pomiarowa, WNT, 2013

Breakdown of average student's workload

	Hours	ECTS
Total workload	42	2,0
Classes requiring direct contact with the teacher	22	1,0
Student's own work (literature studies, preparation for project classes, project preparation) [1]	20	1,0

[1] delete or add other activities as appropriate