



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Ergonomics and safety use of electrical equipment

### Course

Field of study

Electrical Engineering

Area of study (specialization)

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Level of study

First-cycle studies

Form of study

full-time

Year/Semester

3/6

Profile of study

general academic

Course offered in

polish

Requirements

compulsory

### Number of hours

Lecture

15

Laboratory classes

15

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

### Number of credit points

2

### Lecturers

Responsible for the course/lecturer:

Grzegorz Dombek, Ph. D., Eng.

Responsible for the course/lecturer:

Faculty of Environmental Engineering and  
Energy

Institute of Electric Power Engineering

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### Prerequisites

Basic knowledge on physics and electrical devices. Able to connect electrical devices to Low Voltage network and read electrical wiring schemes. A sense of the need to broaden the competence and willingness to work together in a team.

### Course objective

Understanding the hazards associated with electrical equipment and the principles and measures of protection against these hazards. Able to assess the nature and degree of electric shock and select measures of protection. Knows the general requirements of ergonomics and fulfill them in a limited way.



## Course-related learning outcomes

### Knowledge

Know how to determine and explain the dangers due to effects of electric current on a living body. Knows and is able to explain the rules and measures of protection against electric shock. Knows the general notions of ergonomics. Student has knowledge about the operation of the energy system, the principles of its operation and safe functioning.

### Skills

Able to estimate the risk of electric shock. Able to select measures of protection, estimate the risk of electric shock appropriate to the conditions and degree of risk. Able to apply the rules of ergonomics in the development and use of exemplary electrical devices and installation.

### Social competences

A sense of dangers in inappropriate design, realization and using of electrical devices and systems for people's life and health. A sense of ergonomics role in designing and realization of electrical devices and installations.

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

### Lecture:

- knowledge acquired as part of the lecture is verified by a written final test consisting of open or test questions with different points. Passing threshold: 50% of points,
- current grading in each lecture (rewarding activities).

### Laboratory classes:

- current check and rewarding knowledge necessary for the accomplishment of the problems in the area of laboratory tasks,
- evaluation of reports performed on laboratory classes,
- rewarding activities related to the implementation of laboratory classes.

## Programme content

### Lecture:

Effects of current on human body. The factors influencing the effects of current passing through human body. Measures of protection against electric shock. The rules and technical realization of protection against electric shock in LV installations. The rules and technical realization of protection against electric shock in HV power supply system. Definitions and scopes of ergonomics. Overview (by way of examples) the requirements of ergonomics to the manufacturer, designer and user of electrical devices and systems.

### Laboratory classes:



Classes discussing the regulations of the laboratory, topics of laboratory classes and OHS training related to the operation of laboratory positions. To perform 6 two-hour laboratory classes in the field of lecture.

### Teaching methods

Lecture:

- multimedia or object-oriented presentations supported by illustrated examples presented on the board,
- interactive lecture with questions and initiating discussions.

Laboratory classes:

- object-oriented presentations supported by illustrated examples presented on the board,
- presentations of selected experiments,
- initiating teamwork.

### Bibliography

Basic

1. Markiewicz H., Bezpieczeństwo w elektroenergetyce, PWN, 2009.
2. Markiewicz H., Instalacje elektryczne, WNT, Warszawa, 2013.
3. Instalacje elektryczne niskiego napięcia - Część 4-41: Ochrona dla zapewnienia bezpieczeństwa - Ochrona przeciwporażeniowa PN-HD 60364-4-41, Polski Komitet Normalizacyjny.

Additional

1. Ustawa Prawo budowlane.
2. Ustawa Prawo energetyczne.

### Breakdown of average student's workload

	Hours	ECTS
Total workload	59	2,0
Classes requiring direct contact with the teacher	44	2,0
Student's own work (literature studies, preparation for laboratory classes, preparation of reports, preparation for tests) <sup>1</sup>	15	1,0

<sup>1</sup> delete or add other activities as appropriate