



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Safety of machine power systems

### Course

Field of study

Safety Engineering

Area of study (specialization)

Level of study

First-cycle studies

Form of study

part-time

Year/Semester

2/3

Profile of study

general academic

Course offered in

Polish

Requirements

elective

### Number of hours

Lecture

10

Laboratory classes

Other (e.g. online)

Tutorials

Projects/seminars

### Number of credit points

2

### Lecturers

Responsible for the course/lecturer:

Ph.D., Eng., Arkadiusz Dobrzycki

Responsible for the course/lecturer:

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Faculty of Control, Robotics and Electrical  
Engineering

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### Prerequisites



The student has basic knowledge of mathematics and physics. The student is able to describe the basic dependencies and physical processes related to electricity and is aware of the importance of maintaining the principles of occupational health and safety in relation to machines and devices.

### Course objective

Transfer of knowledge related to the safe use of power supply systems for electrical devices and the impact of these devices on the principles of safe work organization. Clarification of the need to update knowledge (renewal of qualification certificates) for people involved in the operation of electrical equipment as an element of safe use and power systems.

### Course-related learning outcomes

#### Knowledge

1. The student knows the structure and principles of operation of power supply systems for electrical devices. [K1\_W01]
2. The student knows the impact of electric current on the human body and knows the rules of safe operation of the machine power supply systems [K1\_W01]
3. The student knows the processes occurring in electrical devices that affect the safety of their use. [K1\_W06]

#### Skills

1. The student is able to properly select the sources and the information derived from them, on their basis to analyze, synthesize and evaluate the problems related to the safe operation of the machine power supply systems [K1\_U01]
2. The student is able to use analytical, simulation and experimental methods to formulate and solve engineering tasks, also with the use of information and communication methods and tools for the purposes of safe use of electrical systems [K1\_U04]
3. The student is able to make a critical analysis of the way of functioning and assess, in connection with the Safety Engineering, the existing technical solutions, in particular machines, devices, facilities, systems, processes and services related to the use of power supply systems for electrical devices. [K1\_U06]

#### Social competences

1. The student is able to see the cause-effect relationships in the implementation of the set goals and use the ranks in relation to the significance of alternative or competitive tasks, bearing in mind the safety of use of power supply systems for electrical devices [K1\_K01].
2. The student is aware of the importance of knowledge in solving problems in the field of safety engineering and continuous improvement also in the area of using electricity supply systems. [K1\_K02]
3. The student is aware of the responsibility for their own work and the readiness to submit to the rules of teamwork and responsibility for jointly performed tasks related to the safe operation of electrical devices [K1\_K07].



### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

formative assessment:

Lecture: knowledge is verified by short tests after the second and fourth didactic units (test questions).

Passing threshold: 50% +1 points.

summary assessment:

Lecture: knowledge is verified through a written test on the basic concepts and problems of operating electrical devices. Passing threshold: 50% +1 points.

### Programme content

Lecture: Fundamentals of operation of selected electrical machines and devices and their power supply systems. Principles of exploitation of electric systems. Performing exploitation tests of installations supplying electric machines and their interpretation. Requirements for people dealing with the operation of power systems and machines. The impact of electric current on the human body. Legal and organizational conditions in the area of electric engineering.

### Teaching methods

Lecture: multimedia presentation illustrated with examples, informative lecture, seminar lecture.

### Bibliography

Basic

1. Markiewicz H.: Instalacje elektryczne, WNT, Warszawa 2018.
2. Lejdy B.: Instalacje elektryczne w obiektach budowlanych, WNT, Warszawa 2019.
3. Niestępski S., Parol M., Pasternakiewicz J., Wiśniewski T.: Instalacje elektryczne. Budowa projektowanie i eksploatacja, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2019.
4. Markiewicz H.: Bezpieczeństwo w Elektroenergetyce, WNT, Warszawa 2021.
5. Normy i rozporządzenia związane z ochroną przeciwporażeniową.

Additional

1. Tytyk E., Bezpieczeństwo i higiena pracy, ergonomia i ochrona własności intelektualnych; Wydawnictwo Politechniki Poznańskiej, Poznań, 2017
3. Horst W., Ryzyko zawodowe na stanowisku pracy, Część I. Wyd. Politechniki Poznańskiej, Poznań, 2004
5. Orlik W.: Egzamin kwalifikacyjny elektryka w pytaniach i odpowiedziach, KaBe S. C., Krosno 2011.



**Breakdown of average student's workload**

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	10	1,0
Student's own work (literature studies, preparation for tests) <sup>1</sup>	40	1,0

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