



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Exploitation of high voltage devices

### Course

Field of study

Year/Semester

Electrical engineering

2/3

Area of study (specialization)

Profile of study

High Voltage Engineering

general academic

Level of study

Course offered in

Second-cycle studies

Polish

Form of study

Requirements

full-time

elective

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

30

Tutorials

Projects/seminars

### Number of credit points

2

### Lecturers

Responsible for the course/lecturer:

Responsible for the course/lecturer:

dr hab. inż. Krzysztof Siodła, prof. uczelni  
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### Prerequisites

The student has knowledge of building power devices and networks. Has the ability to effectively self-educate in the field related to the selected field of study and is aware of the need to expand his knowledge, skills, competences, and readiness to cooperate within the team.

### Course objective

Expanding knowledge on insulation systems of high voltage devices. Acquainting with factors that affect the operation and condition of insulation systems. Getting to know the methods of diagnostics of electrical insulating systems. Getting to know the activities and operating procedures of devices operating in the electricity generation, transmission and distribution system (transformers, cables, capacitors, insulators, switches, GIS / GIL).



### Course-related learning outcomes

#### Knowledge

Has extended knowledge of the construction and operation of insulation systems of high voltage devices.

#### Skills

He can evaluate and compare design solutions and processes of manufacturing electrical components and systems, due to the set utility and economic criteria

#### Social competences

He recognizes the importance of knowledge in solving cognitive and practical problems and understands that in technology, knowledge and skills quickly become obsolete and therefore require constant replenishment

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Checking the knowledge in the form of passing a written exam.

### Programme content

Construction and operation of insulation systems of high voltage devices. Diagnostics of electroinsulation systems. Principles of operation of high voltage power equipment and installations. Technical and operational documentation, commissioning the device for operation, rules of operation, operation and maintenance manual. Operating conditions for generators, power transformers, power stations, transmission and distribution overhead and cable lines, capacitor banks for reactive power compensation, propulsion devices, lighting devices, power generating devices, rectifiers, battery devices and others. Electric shock protection. Principles of rational and safe use of devices and installations.

### Teaching methods

Lecture with a multimedia presentation supplemented with examples given on the blackboard.

### Bibliography

#### Basic

1. Strojny J., Strzałka J., Elektroenergetyka. Obsługa i eksploatacja urządzeń, instalacji i sieci, Europex Kraków, 2003.
2. Lenartowicz R., Zdunek W., Egzamin kwalifikacyjny. Urządzenia instalacje i sieci elektroenergetyczne, Medium Warszawa, 2010.
3. Inżynieria wysokich napięć w elektroenergetyce, pod red. H. Mościckiej-Grzesiak, Wydawnictwo Politechniki Poznańskiej, tom 1 1996, tom 2 1999.
4. Flisowski Z., Technika wysokich napięć, WNT, Warszawa, 2008.
5. Gacek Z., Technika wysokich napięć, Wydawnictwo Politechniki Śląskiej, Gliwice, 1999.



Additional

1. Gacek Z., Kształtowanie wysokonapięciowych układów izolacyjnych stosowanych w elektroenergetyce, Wydawnictwo Politechniki Śląskiej, Gliwice, 2002.
2. Gacek Z., Wysokonapięciowa technika izolacyjna, Wydawnictwo Politechniki Śląskiej, Gliwice, 2006.
3. Rakowska A., Siodła K., Sześćciofluorek siarki i gazy alternatywne jako izolacja w urządzeniach elektroenergetycznych wysokiego napięcia, Wiadomości Elektrotechniczne, 2022, nr 3, 3-6

**Breakdown of average student's workload**

	Hours	ECTS
Total workload	55	2,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for tests/exam) <sup>1</sup>	25	1,0

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