

DESCRIPTION OF THE COURSES

- Course code: ELR2408
- Course title: **Electric shock protection in high voltage objects**
- Language of the lecturer: polish

<i>Course form</i>	<i>Lecture</i>	<i>Classes</i>	<i>Laboratory</i>	<i>Project</i>	<i>Seminar</i>
<i>Number of hours/week*</i>	<i>1</i>				<i>1</i>
<i>Number of hours/semester*</i>	<i>15</i>				<i>15</i>
<i>Form of the course completion</i>	class test				Seminar project
ECTS credits	<i>1</i>				<i>1</i>
Total Student's Workload	<i>30</i>				<i>30</i>

- Level of the course (basic/advanced): advanced
- Prerequisites: Credited Electrical devices and Electrical safety
- Name, first name and degree of the lecturer/supervisor: Zbigniew Wróblewski, PhD, DSc
- Names, first names and degrees of the team's members:
Lech Danielski, PhD
Marek Szuba, PhD
Ryszard Zacirka, PhD
Marek Jaworski, PhD
Janusz Konieczny, PhD
- Year: 5 Semester: 10
- Type of the course (obligatory/optional): optional
- Aims of the course (effects of the course):
- Form of the teaching (traditional/e-learning): traditional
- Course description:
The electrical threats and electrical accidents in high voltage systems. Legal documents concerning designing, building and exploitation of protection against electric shock in high voltage devices. General rules of electric shock prevention. The classification of protection systems. Basic protection, fault protection. The principles of earthing's designing, building, and bonding. Protective equipment and safety marks. Organization of safety work near high voltage devices. The principles and methods of testing of electric shock protection. The rules of designing of protection against electric shock.

- Lecture:

<i>Particular lectures contents</i>	<i>Number of hours</i>
1. Legal documents concerning protection against electric shock in high voltage systems and devices. Working of electric current on human beings.	<i>2</i>
2. Electrical accidents near high voltage devices.	<i>2</i>
3. The causes of threat and their probability.	<i>2</i>

4. General rules of electric shock prevention. The criteria of safety.	2
5. The types of protection systems. Basic protection.	2
6. Fault protection.	2
7. Earthing systems. Earthings' bonding	2

- Classes – the contents:
- Seminars – the contents:
 1. Protective equipment and safety marks.
 2. The principles of safe work near electric high voltage devices.
 3. The principles of organization of protection against electric shock testing.
 4. The aim and range of inspection. Testing of electric resistivity of soil.
 5. Testing of earth resistance and earth voltage.
 6. Measurement of touch voltage.
 7. Designing of protection against electric shock.
- Laboratory – the contents:
- Project – the contents:
- Basic literature:
 1. Jabłoński W.: Zapobieganie porażeniom elektrycznym w urządzeniach elektroenergetycznych w.n., WNT, Warszawa 1992.
 2. PN-E-05115:2002 Instalacje elektroenergetyczne prądu przemiennego o napięciu wyższym od 1 kV.
 3. PN-EN-50341-1:2005 Elektroenergetyczne linie napowietrzne prądu przemiennego powyżej 45 kV - Część 1: Wymagania ogólne - Specyfikacje wspólne
- Additional literature:
 1. Rozporządzenie Ministra przemysłu z 8.10.1990 r. w sprawie warunków jakim powinny odpowiadać urządzenia elektroenergetyczne w zakresie ochrony przeciwporażeniowej (Dz. U. nr 81 z 1990 r., poz. 473).
 2. Przepisy Budowy Urządzeń Elektroenergetycznych. Wydanie II. Wema. Warszawa 1988.
 3. Rozp. Ministra Gospodarki z 17.09.1999 w sprawie bezpieczeństwa higieny pracy przy urządzeniach i instalacjach energetycznych (Dz. U. nr 80 z 1999 r., poz. 912).
- Conditions of the course acceptance/creditation:
Completion of the course is confirmed on the basis of class test covering the whole material as well as on the seminar project

* - depending on a system of studies