

Discipline	Special issues of protection against electromagnetic effect of lightning
Level of HE	Third (educational and scientific)
Course	2
Scope	3 ECTS credits
Language of instruction	Ukrainian, English
Department	Theoretical electrical engineering
Requirements for the beginning of study	Basic knowledge of general physics, theoretical foundations of electrical engineering, industrial electronics, electromagnetic compatibility of technical means. Initial ideas about the main types and characteristics of electrical equipment in electrical and other systems and installations for which the electromagnetic effects of lightning discharges can be critical.
What will we study?	Basics of protection against electromagnetic effects of lightning. Varieties and characteristics of screens. Multilayer screens. Shielding of electromagnetic fields of lightning. Induction of voltages and currents in overhead lines and cables. Shielding of the magnetic field in buildings. Separate distances and isolated lightning protection systems. Examples of protection of facilities in various industries (power plants and substations, wind power plants, photovoltaic plants, transport, oil and gas complexes, renewable energy facilities, industrial and agricultural enterprises). Active and other alternative lightning rods. Regulations.
Why this is interesting / worth learning	Important objects in various industries are exposed to serious dangers associated with electromagnetic influences during lightning discharges, direct and near. Therefore, it is important to be able to analyze such possible effects and choose adequate means of protection against them.
Why you can learn (learning outcomes)	Navigate in dangerous situations related to the electromagnetic effects of lightning discharges on various important objects. Understand the principles of protection against them, perform calculations of induced voltages and currents, choose means of protection. Get acquainted with the relevant regulations.
How to use the acquired knowledge and skills (competences)	Calculate the characteristics of electromagnetic and other effects of lightning on various objects. Develop and select appropriate remedies. Apply current regulations to develop protection.
Information support	Syllabus, teaching materials (manuals, presentations for lectures, etc.), standards.
Form of conducting classes	Lectures, practical classes.
Semester control	Test