

LEARNING OUTCOMES

Explanation of symbols:

- K (before the underscore) – learning outcomes for the field of study
- W – category of knowledge
- U – category of skills
- K (after the underscore) – category of social competences
- 01, 02, 03 and subsequent numbers – number of a learning outcome

course title: ELECTRICAL ENGINEERING	
level of studies: third-cycle of higher education (PhD programme)	
profile of studies: general academic	
learning outcome symbol	learning outcomes
KNOWLEDGE	
K3A_W1)	has broadened and deepened knowledge of mathematics, physics and other areas of science useful for formulating and solving complex tasks related to electrical engineering
K3A_W2)	has broadened, theoretically founded general knowledge related to electrical engineering
K3A_W3)	has advanced knowledge of development trends and new achievements in the field of electrical engineering
K3A_W4)	knows selected methods and techniques and their theoretical foundations as well as tools and materials used in solving complex engineering tasks related to electrical engineering
K3A_W5)	has general knowledge necessary to understand social, economic, legal and other non-technical conditions of engineering activities and their application in engineering practice
K3A_W6)	has basic knowledge of technology transfer and commercialisation of research results, including issues related to the protection of intellectual property
K3A_W7)	has knowledge of the research methodology related to scientific activity
SKILLS	
K3A_U1)	can obtain information from literature, databases and other sources; is able to integrate the obtained information, make their interpretation and critical evaluation, and draw conclusions and formulate opinions
K3A_U2)	is able to work individually and in a research team
K3A_U3)	can communicate using various techniques in the scientific environment and in other environments, also in a foreign language recognized as the language of international communication
K3A_U4)	has the ability to transfer his knowledge and skills to various groups of the society or in other ways contribute to the education of specialists
K3A_U5)	is able to prepare documentation of research work results and scientific publications, also in a foreign language, according to the principles of developing such publications
K3A_U6)	can use information communication techniques appropriate for conducting research
K3A_U7)	is able to use Polish and foreign scientific literature sources concerning the issues related to electrical engineering
K3A_U8)	can plan and carry out experiments, including measurements and computer simulations, interpret the results obtained and draw conclusions
K3A_U9)	can use advanced analytical, simulation and experimental methods to formulate and solve engineering tasks
K3A_U10)	is able to formulate and test hypotheses related to engineering problems, also of a research nature
K3A_U11)	can - when formulating and solving engineering tasks and problems - integrate knowledge from various fields and disciplines and apply a systemic approach, also taking into account also non-technical aspects
K3A_U12)	is able to assess the usefulness and the possibility of using new achievements (techniques and technologies) in electrical engineering
K3A_U13)	is able to prepare a preliminary economic assessment of engineering activities

K3A_U14)	is able to analyse the way of functioning and to evaluate - within the scope of the scientific discipline represented - existing technical solutions and methods leading to obtaining them
K3A_U15)	can, using the acquired knowledge, critically assess results of both his/her and other people's research and other creative work as well as their contribution to the development of electrical engineering
K3A_U16)	can identify and formulate the specification of complex tasks and problems characteristic of electrical engineering, including conceptually new tasks and research problems, leading to innovative technical solutions
K3A_U17)	is able, using conceptually new methods, to solve complex tasks and problems characteristic of electrical engineering, including non-standard tasks, using new methods that contribute to the development of knowledge
SOCIAL COMPETENCES	
K3A_K1)	understands and feels the need for continuous self-education, for improving his/her professional and personal competences, as well as for analysing the latest achievements related to electrical engineering
K3A_K2)	is aware of importance and understands non-technical aspects and effects of engineering activity, including its influence on the environment and the related responsibility for the decisions taken
K3A_K3)	is aware of importance of behaving in a professional way, complying with the rules of professional ethics
K3A_K4)	is aware of the responsibility for jointly implemented tasks related to teamwork
K3A_K5)	can think and act in an independent, creative and entrepreneurial way, shows initiative in creating new ideas and searching for innovative solutions
K3A_K6)	understands and feels the need for getting involved in the education of specialists in the field of electrical engineering and in other activities leading to the development of a knowledge-based society