

Learning outcomes of the programme:

1.	Field of study	Technical Physics
2.	Academic year of entry	2014/2015 (summer term)
3.	Level of qualifications/degree	second-cycle studies
4.	Degree profile	general academic

Code of the learning outcome of the programme	Learning outcomes The graduate:	Codes of the learning outcomes of the areas of education to which the learning outcome of the programme is related
KNOWLEDGE		
KFT_W01	properly understands the civilisational importance of physics and its applications	X2A_W01
KFT_W02	has an in-depth knowledge of condensed phase physics, nuclear physics and computer methods used in modern physics and industry	X2A_W01, X2A_W05
KFT_W03	has a general knowledge of the current directions of development related to measurement methods and methods for computer modelling of physical phenomena as well as of the latest developments and directions of development in terms of modern materials and nuclear reactors	X2A_W06
KFT_W04	is familiar with experimental techniques used in research and modern measuring techniques used in industry	X2A_W01, X2A_W03, X2A_W06
KFT_W05	knows and understands the description of physical phenomena within the selected theoretical models; can independently reproduce basic physical laws	X2A_W01, X2A_W02, X2A_W03
KFT_W06	understands the principle of operation of electronic systems used in process control	X2A_W05
KFT_W07	knows the basics of computational and IT techniques used in physical process modelling and process control	X2A_W04
KFT_W08	knows the construction and operation of scientific and measuring equipment and nuclear reactors	X2A_W03, X2A_W05
KFT_W09	knows the basic principles of occupational health and safety to the extent that allows independent work at the research or measurement position, including exposure to ionizing radiation; knows the basics of nuclear law and legal conditions of energetics	X2A_W07, X2A_W08
KFT_W10	has an in-depth knowledge of selected scientific methods and is familiar with the issues characteristic of the discipline of science not related to the programme	
SKILLS		
KFT_U01	is able to clearly explain the processes occurring in nature and the methods used in the technique based on physics	X2A_U04, X2A_U06
KFT_U02	can use a mathematical apparatus to solve physical problems of medium complexity	X2A_U06
KFT_U03	can discuss physical processes, technical solutions and interdisciplinary issues with representatives of various related sciences	X2A_U04, X2A_U06
KFT_U04	can explain the operation of a number of mechanical, electrical and electronic devices based on their knowledge	X2A_U04
KFT_U05	is able to plan and carry out various types of physical measurements and experiments with the use of modern control and measurement devices and self-prepared software	X2A_U01, X2A_U04
KFT_U06	is able to choose the right method for solving a specific engineering problem, determine its limitations, develop documentation for the task and design a set of tests of the obtained result	X2A_U01, X2A_U02, X2A_U05
KFT_U07	is able to critically analyse measurement results, considering statistical uncertainties and systematic errors	X2A_U02
KFT_U08	is able to read electronic diagrams, create their own systems to control the measurement of external devices in real time and prepare their software	X2A_U01, X2A_U04
KFT_U09	has the ability to self-educate, obtain information from literature, databases and other sources	X2A_U03
KFT_U10	can prepare the programme algorithm, write the programme in the object-oriented language and test its functioning	X2A_U04
KFT_U11	is able to independently prepare the elaboration of study results, including explanation of the aim of the study, adopted methodology, description, analysis and discussion of the results obtained in relation to literature data	X2A_U02, X2A_U03, X2A_U05
KFT_U12	is able to work individually and in an interdisciplinary team, plan the way of solving a problem and the division of tasks within the team, estimate the time for the implementation of a specific task	X2A_U01
KFT_U13	has a sufficient knowledge of English (B2+ level) to use the specialist literature and present study results; is familiar with specialist terminology	X2A_U10
KFT_U14	is able to apply the obtained knowledge in physics to the discussion of problems in related scientific fields and disciplines	X2A_U04, X2A_U06

KFT_U15	has an in-depth ability to prepare a variety of written studies on specific issues in physics, technology or cross-disciplinary issues	X2A_U08
KFT_U16	has an in-depth ability to prepare and present an oral presentation on physics or interdisciplinary issues in Polish and English, using modern multimedia techniques	X2A_U09
KFT_U17	is able to determine the directions of further learning and implement the process of self-education e.g. to improve professional competences	X2A_U07
KFT_U18	has an in-depth ability to pose and analyse problems based on the acquired contents from the scientific discipline not related to the programme	
SOCIAL COMPETENCES		
KFT_K01	understands the need for further education and can inspire discussions on issues related to physics and technology among specialists and lay people	X2A_K01, X2A_K02
KFT_K02	understands the necessity of systematic work on long-term projects, planning next stages of activities and implementing the adopted schedule	X2A_K01, X2A_K02
KFT_K03	is able to work in a group adopting different roles, including interdisciplinary teams; is able to identify priorities for realization of a task specified by themselves or others	X2A_K02, X2A_K03
KFT_K04	understands the need for regular reading of scientific journals in the fields of physics and engineering sciences	X2A_K05
KFT_K05	understands and appreciates the importance of intellectual honesty in their own and others' actions; acts ethically	X2A_K04
KFT_K06	understands social aspects of applying the acquired knowledge and skills and the related responsibly	X2A_K06
KFT_K07	is able to precisely formulate questions in order to deepen their understanding of a given topic, can listen to a different opinion and professionally discuss a given issue	X2A_K01, X2A_K02, X2A_K03
KFT_K08	can think and act in an entrepreneurial way	X2A_K07
KFT_K09	understands the need for an interdisciplinary approach to solving problems, integrating knowledge from different disciplines and practising self-education to deepen the knowledge acquired	