Learning outcomes of the programme:

1.	**Field of study**	**Computer Science**
2.	Academic year of entry	2015/2016 (winter term)
3.	Level of qualifications/degree	first-cycle studies (in engineering)
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	
K_1_A_I_W01	has knowledge in mathematics related to numerical systems, combinatorics and graph theory, linear algebra and analytic geometry, differential calculus and integral calculus of functions of one and several real variables	T1A_W01, T1A_W02, T1A_W03, T1A_W04
K_1_A_I_W02	is familiar with the concepts and methods of mathematical logic, multiplicity theory and discrete mathematics related to the studied programme	T1A_W01, T1A_W03, T1A_W04
K_1_A_I_W03	has mathematical knowledge enabling the use of specialized studies on multiple applications of mathematics in computer practice	T1A_W01, T1A_W03, T1A_W04
K_1_A_I_W04	knows the basics of mathematical formalism for the construction and analysis of simple mathematical models in the field of computer science	T1A_W01, T1A_W03
K_1_A_I_W05	has the knowledge of mathematics, physics and electronics necessary to understand and analyse the basic processes found in electronic systems and knows the standard languages of the equipment description	T1A_W01, T1A_W02
K_1_A_I_W07	has an orderly knowledge of the architecture of operating systems	T1A_W03
K_1_A_I_W09	has a thorough knowledge of algorithms and data structures; has knowledge of optimization techniques	T1A_W02, T1A_W03, T1A_W04, T1A_W05
K_1_A_I_W11	has an orderly and theoretically built-in knowledge of the devices that are part of computer networks, including wireless networks, and the architecture and configuration of these devices in local and wide area networks	T1A_W03, T1A_W04, T1A_W05, T1A_W07
K_1_A_I_W12	is aware of the current state and the state-of-the-art developmental trends in computer science; can use information and communication techniques, including the use in software engineering	T1A_W05
K_1_A_I_W13	has a basic knowledge of client-server architecture to understand the essence of data transmission in network systems	T1A_W04, T1A_W05
K_1_A_I_W14	has a basic understanding of user interfaces, their specifications and design principles	T1A_W04, T1A_W05, T1A_W07
K_1_A_I_W15	knows the basics of computer graphics and the methods of image processing	T1A_W04, T1A_W07
K_1_A_I_W16	has an orderly knowledge of three-dimensional image processing and animation	T1A_W04, T1A_W07
K_1_A_I_W17	knows the basics of interactive multimedia applications	T1A_W04, T1A_W07
K_1_A_I_W18	has knowledge of the methods of searching and collecting information and exploring data	T1A_W03, T1A_W04, T1A_W07
K_1_A_I_W19	has a structured knowledge of decision support systems and other AI systems	T1A_W03, T1A_W04, T1A_W07
K_1_A_I_W20	has a structured knowledge of the principles of building dynamically generated websites and programming languages	T1A_W04, T1A_W05, T1A_W07
K_1_A_I_W21	has a structured knowledge of the rules and methods for allocating access to information systems	T1A_W03, T1A_W04, T1A_W05, T1A_W07
K_1_A_I_W22	knows the basics of data security in computer systems	T1A_W03, T1A_W04, T1A_W07
K_1_A_I_W23	has knowledge of mobile IT solutions	T1A_W04, T1A_W07
K_1_A_I_W25	has an elementary knowledge of intellectual property protection	T1A_W10
K_1_A_I_W27	is familiar with the principles of creating and developing forms of individual entrepreneurship	T1A_W11
	SKILLS	
K_1_A_I_U01	can obtain information from literature, databases and other properly selected sources, can integrate the information obtained, interpret it, draw conclusions and formulate and justify opinions	T1A_U01
K_1_A_I_U02	can work individually and collectively, can develop and realize the work schedule to meet deadlines	T1A_U02
K_1_A_I_U03	can develop documentation on the implementation of an engineering task and prepare an overview of the results of the realization of this task	T1A_U01, T1A_U03

K_1_A_I_U04	can prepare and present an oral presentation on specific issues in relation to the studied programme	T1A_U04
K_1_A_I_U05	has the ability to self-learn in order to improve professional competences	T1A_U01, T1A_U05
K_1_A_I_U06	has the ability to understand and create various types of written and oral texts requiring systemic knowledge of the language in relation to its grammatical structures, lexis and phonetics; communicates in a foreign language using different communication channels and techniques to the extent appropriate for the specific area of knowledge	T1A_U06
K_1_A_I_U09	can design, build, run and test a system or simple electronic system	T1A_U14, T1A_U16
K_1_A_I_U11	knows the basic principles of health and safety	T1A_U11
K_1_A_I_U14	can configure and install operating system-specific software as well as the operating system itself	T1P_U17
K_1_A_I_U15	can design and implement an algorithm that performs a specific programming task	T1A_U14, T1A_U15, T1A_U16
K_1_A_I_U16	knows the commands and syntax of high- and low-level programming languages and the appropriate development environments	T1A_U14, T1A_U15, T1A_U16
K_1_A_I_U20	can create AI systems, including decision support and computational intelligence systems	T1A_U14, T1A_U15, T1A_U16
K_1_A_I_U21	can design and modify data exploration systems: data collection, grouping and search for information based on selected data exploration methods	T1A_U14, T1A_U15, T1A_U16
K_1_A_I_U22	can design and practically apply data security solutions in IT systems	T1A_U10, T1A_U12, T1A_U13, T1A_U14, T1A_U15, T1A_U16
K_1_A_I_U23	can design an IT system defining the basic structural and object models of the designed system and full documentation of the work	T1A_U07, T1A_U10, T1A_U13, T1A_U16
K_1_A_I_U24	can appropriately use various tools that support project work	T1A_U15
K_1_A_I_U25	can efficiently use different methods of data exploration and manipulation in database systems	T1A_U07, T1A_U08, T1A_U09
SOCIAL COMPETENCES		
K_1_A_I_K01	understands the need and the necessity to continuously learn and improve one's professional and personal competences	T1A_K01
K_1_A_I_K03	can co-operate and work in a team, accepting different roles, planning and timely realizing various tasks	T1A_K03, T1A_K04
K_1_A_I_K04	acts ethically, understands the importance of intellectual honesty in their own and others' actions	T1A_K04, T1A_K05
K_1_A_I_K06	is able to form opinions on basic issues, current state and development trends in computer science	T1A_K07

Code of the learning outcome of the programme	**Learning outcomes leading to the acquisition of engineering competences** The graduate:	Codes of the learning outcomes of the areas of education to which the learning outcome of the programme is related
KNOWLEDGE		
K_1_A_I_W06	has a structured knowledge of the life cycle of devices and IT systems, knowledge of computer architecture, hardware layer and software of microprocessor systems	InzA_W01, T1A_W04, T1A_W05, T1A_W06
K_1_A_I_W08	has a basic knowledge of materials used in the electronic industry and is familiar with computer tools for the design and simulation of electronic systems and the above-mentioned diagnostic methods and techniques	InzA_W02, T1A_W05, T1A_W07
K_1_A_I_W10	is familiar with typical engineering technologies in the field of studied programme	InzA_W05, T1A_W03, T1A_W04, T1A_W05
K_1_A_I_W24	has the basic knowledge necessary to understand the social, economic, legal and other non-technical conditions of engineering activities, knows the basic principles of health and safety at work in computer science	InzA_W03, T1A_W08
K_1_A_I_W26	has a basic knowledge of management, including quality management and business conduct	InzA_W04, T1A_W09
SKILLS		
K_1_A_I_U07	can use analytical, simulation and experimental methods to formulate and solve engineering tasks, can create a simple mathematical model in the field of computer science and analyse the formal description	InzA_U02, T1A_U07, T1A_U08, T1A_U09
K_1_A_I_U08	can plan and conduct experiments, can use learned mathematical methods and models, as well as computer simulations to solve engineering tasks e.g. for analysis and evaluation of the performance of electronic, mechanical and other systems	InzA_U01, T1A_U07, T1A_U08, T1A_U09
K_1_A_I_U10	can perceive their non-technical, legal and economic aspects when formulating and solving tasks involving the design of components and systems	InzA_U03, T1A_U10, T1A_U12, T1A_U13

K_1_A_I_U12	can configure communication devices and construct a local network of different topologies	InzA_U08, T1A_U12, T1A_U13, T1A_U15, T1A_U16
K_1_A_I_U13	can perform a preliminary economic analysis of the engineering activities undertaken, can choose the right network service for the specific implementation and equipment	InzA_U04, T1A_U16
K_1_A_I_U17	can compile, run and test a self-written computer program	InzA_U06, T1A_U07, T1A_U16
K_1_A_I_U18	can assess the suitability and apply routine IT methods and tools to practical engineering tasks	InzA_U07, T1A_U07, T1A_U14, T1A_U15, T1A_U16
K_1_A_I_U19	can make a critical analysis of functioning and assess the existing technical solution, can build an application of a given use (also multimedia and for mobile devices) by selecting and using the right method and tools	InzA_U05, T1A_U12, T1A_U14, T1A_U15, T1A_U16
SOCIAL COMPETENCES		
K_1_A_I_K02	is aware of the importance and understands the non-technical aspects and effects of the activities of an engineer-IT specialist and the related responsibility for the decisions taken	InzA_K01, T1A_K02
K_1_A_I_K05	can think and act in an entrepreneurial way	InzA_K02, T1A_K06