1.	**Field of study**	**Computer Science**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2019/2020 (summer term)
4.	Level of qualifications/degree	second-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time

Code of the learning outcome of the programme	**Learning outcomes** The graduate:	Codes of the second-order PRK characteristics to which the learning outcome of the programme is related
	KNOWLEDGE	
K_W01	Has an in-depth knowledge in the field of some sections of mathematics, including elements of set theory, discrete and applied mathematics, including mathematical methods necessary for modeling and analysis of advanced elements and digital electronic systems, description, analysis and synthesis of electronic signal processing algorithms together with image processing algorithms, also 3D ones;	2018_P7S_WG
K_W02	Knows mathematical foundations of information theory, algorithm theory and cryptography and their practical usage;	2018_P7S_WG
K_W03	Has an ordered knowledge enabling use of specialist descriptions concerning multiple applications of mathematics in IT practice;	2018_P7S_WG
K_W04	Possesses an ordered knowledge in the field of computer architecture, including parallel and multiprocessor computers;	2018_P7S_WG
K_W05	Has a well established knowledge in the field of architecture and operating systems design;	2018_P7S_WG
K_W06	Has a grounded knowledge in the field of modern programming techniques: object programming, concurrent and parallel programming;	2018_P7S_WG
K_W07	Has a wide knowledge concerning program optimization taking into account various aspects of computer architectures;	2018_P7S_WG
K_W08	Possesses a wide knowledge in the field of modern information analysis and processing used in computational intelligence, mainly in swarm intelligence and evolutionary methods;	2018_P7S_WG
K_W09	Has a grounded knowledge in the field of algorithms and data structures, is familiar with optimization techniques;	2018_P7S_WG
K_W10	Has a thorough knowledge in the field of analysis methodologies and techniques, designing, modeling, testing, manufacturing and maintenance of software (programming methodology and techniques) and knows concepts of procedural, functional and object programming and the meaning of code quality in the aspect of software maintenance;	2018_P7S_WG
K_W11	Has an ordered and theoretically grounded knowledge of devices comprising computer networks, including wireless networks and architecture and configuration of such devices in local and wide areas networks;	2018_P7S_WG
K_W12	Possesses a thorough knowledge of user interfaces, their specifications and design principles;	2018_P7S_WG
K_W13	Has an ordered knowledge in the field of client-server architecture enabling understanding the essence of data transfer in network systems;	2018_P7S_WG
K_W14	Understands the present state and the newest developmental trends of Information Technology and is able to use information-communication techniques, including their use in software engineering;	2018_P7S_WG
K_W15	Has knowledge in the field of computer graphics and methods of image processing including 3D and animation;	2018_P7S_WG
K_W16	Knows basics of multimedia interactive applications;	2018_P7S_WG
K_W17	Possesses a grounded knowledge in the field of information retrieval and gathering and data mining;	2018_P7S_WG
K_W18	Has an ordered knowledge referring to decision support systems and other artificial intelligence systems;	2018_P7S_WG
K_W19	Has an ordered knowledge referring to network information systems and their use;	2018_P7S_WG
K_W20	Has a grounded knowledge concerning data security in computer systems, knows principles and methods of assigning access to information systems;	2018_P7S_WG

K_W21	Possesses a basic knowledge to understand social, economic, legal and other non-technical conditions of engineering activities, is familiar with basic health and safety principles applied in Information Technology;	2018_P7S_WK
K_W22	Has a basic knowledge referring to protection of intellectual property;	2018_P7S_WK
K_W23	Has an elementary knowledge from the field of management, including quality management and managing economic activity;	2018_P7S_WK
K_W24	Knows principles of creating and development of individual entrepreneurship forms, taking advantage of science fields and scientific disciplines appropriate for the studied faculty.	2018_P7S_WK
SKILLS		
K_U01	Is able to obtain information from literature, data bases and other properly chosen sources, is able to integrate obtained information, interpret and draw conclusions as well as formulate and justify opinions;	2018_P7S_UW
K_U02	Can work individually and in a team, can manage a small team, can elaborate and realize a work schedule allowing to meet deadlines;	2018_P7S_UO
K_U03	Is able to elaborate a detailed documentation concerning realization of the project goal and prepare elaboration of this task results;	2018_P7S_UW
K_U04	Is able to prepare and present an oral presentation concerning realization of a project task and to lead a discussion about the presented problem;	2018_P7S_UK
K_U05	Can specify and realize a self-study process, for example for improving professional competences;	2018_P7S_UU
K_U06	He communicates in a foreign language using communicative language skills at an advanced level. Has the ability to read and understand complicated scientific texts and in-depth ability to prepare various written (including research) papers and oral presentations on specific issues in a particular field of study in a foreign language.	2018_P7S_UK
K_U07	Is able to create a mathematical model for information technology, use and perform formal description analysis;	2018_P7S_UW
K_U08	Is able to use the learned methods and mathematical models and computer simulations for solving project tasks, among others, for analysis and estimation of electronic, mechanical and other systems operation;	2018_P7S_UW
K_U09	Can design, construct, activate and test an electronic system or a structure;	2018_P7S_UW
K_U10	Is able - while formulating and solving problems involving elements, systems and constructions designing – to recognize also their non-technical aspects,legal and economic;	2018_P7S_UW
K_U11	Can configure communication devices and construct a local and a wide area network and match an appropriate net service for a specific realization and possessed equipment;	2018_P7S_UW
K_U12	Can design and implement an algorithm for a specific programming task;	2018_P7S_UW
K_U13	Knows commands and syntax of high-level and low-level programming languages and sufficient programming environments;	2018_P7S_UW
K_U14	Is able to take advantage of routine methods and information technology tools for practical tasks;	2018_P7S_UW
K_U15	Can create an application with assorted usage, including a multimedia one, choosing and taking advantage of an appropriate method and tools;	2018_P7S_UW
K_U16	Is able to create artificial intelligence systems, including decision support and computational intelligence systems;	2018_P7S_UW
K_U17	Can design and modify data mining systems: gather, group and retrieve information basing on the chosen data mining methods;	2018_P7S_UW
K_U18	Can design and practically use solutions ensuring data security in information technology systems;	2018_P7S_UW
K_U19	Can design information technology systems defining basic structural and object models of the designed system and prepare full documentation of the works;	2018_P7S_UW
K_U20	Is able to use various tools supporting designing works in an appropriate way;	2018_P7S_UW
K_U21	Can effectively use various methods of data mining and data manipulating in data base systems.	2018_P7S_UW
SOCIAL COMPETENCES		
K_K01	Is aware of the importance of knowledge in problem solving and can formulate opinions about basic issues, current state and developmental tends in IT.	2018_P7S_KK, 2018_P7S_KR
K_K02	Is aware of the importance and understands non-technical aspects and consequences of information scientist’s professional activities and take necessary responsibility for decisions taken;	2018_P7S_KK, 2018_P7S_KR
K_K03	Can think and act in an entrepreneurial manner;	2018_P7S_KO

K_K04	Acts ethically, understands importance of intellectual honesty both in his/her own actions and in actions of other people;	2018_P7S_KR