Zał. Nr 2 do ZW 16/2020

ASSUMED LEARNING OUTCOMES

FACULTY: .....Electronics.....

MAIN FIELD OF STUDY: ..... Electronic and computer engineering.....

EDUCATION LEVEL: first-level

PROFILE: general academic

Location of the main-field-of study:

Branch of science: …… Engineering ……..

Discipline

…… Automation, Electronics and Electrotechnics ……

Explanation of the markings:
P6U – universal first degree characteristics corresponding to education at the first-level studies - 6 PRK level *
P7U – universal first degree characteristics corresponding to education at the second-level studies - 7 PRK level *

P6S – second degree characteristics corresponding to education at the first-level studies - 6 PRK level *
P7S – second degree characteristics corresponding to education at the second-level studies - 7 PRK level *

W - category "knowledge"
U - category "skills"
K - category "social competences"
K (*faculty symbol*) _W1, K (*faculty symbol*) _W2, K (*faculty symbol*) _W3, … - main-field-of study learning outcomes related to the category "knowledge"
K (*faculty symbol*) _U1, K (*faculty symbol*) _U2, K (*faculty symbol*) _U3, … - main-field-of study learning outcomes related to the category "skills"
K (*faculty symbol*) _K1, K (*faculty symbol*) _K2, K (*faculty symbol*) _K3, … - main-field-of study learning outcomes related to the category "social competences"
S (*faculty symbol*) _W.., S (*faculty symbol*) _W.., S (*faculty symbol*) _W.., … - specialization learning outcomes related to the category "knowledge"
S (*faculty symbol*) _U.., S (*faculty symbol*) _U.., S (*faculty symbol*) _U.., … - specialization learning outcomes related to the category "skills"
S (*faculty symbol*) _K.., S (*faculty symbol*) _K.., S (*faculty symbol*) _K.., … - specialization learning outcomes related to the category "social competences"
… _inż. – learning outcomes related to the engineer competences

* delete as applicable

Main field of study learning outcomes	**Description of learning outcomes for the main-field-of study** **… Electronic and Computer Engineering ……** After completion of studies, the graduate:	Reference to PRK characteristics		
		Universal first degree characteristics (U)	Second degree characteristics typical for qualifications obtained in higher education (S)	
			Characteristics for qualifications on 6 / 7* levels of PRK	Characteristics for qualifications on 6 and 7 levels of PRK, enabling acquiring engineering competences
KNOWLEDGE (W)				
K1EAC_W01	has basic knowledge of mathematics, including mathematical analysis, algebra, geometry, probability and numerical methods, necessary for the description, analysis and synthesis of automation and robotics systems and basic processes occurring in them	P6U_W	P6S_WG P6S_WK	
K1EAC_W02	has a basic knowledge of classical mechanics, wave motion, mechanics, quantum optics, electric and magnetic fields and is familiar with the basics of metrology, theory and measurement techniques of electrical and non-electrical quantities	P6U_W	P6S_WG	P6S_WG
K1EAC_W03	knows the basics of information technology and the engineering and methodology of object-oriented programming, together with the basic tools and programming environments	P6U_W	P6S_WG	
K1EAC_W04	has knowledge of the basic principles of constructing electronic devices and the basics of operation and application of electronic components and sensors; has basic knowledge of methods and programmes for analysing electronic circuits	P6U_W	P6S_WG	P6S_WG
K1EAC_W05	has a basic knowledge of terminology, basic tasks, techniques and components of automation and robotics	P6U_W	P6S_WG	P6S_WG

K1EAC_W06	knows the basics of telecommunications and defines basic concepts of wireline, wireless and optical telecommunications	P6U_W	P6S_WG	
K1EAC_W07	is familiar with the basic issues of digital deterministic signal processing theory and microprocessor and microcontroller programming	P6U_W	P6S_WG	
K1EAC_W08	has the knowledge to understand non-technical conditions of engineering activities; he knows the principles of creating individual entrepreneurship	P6U_W	P6S_WG	
K1EAC_W09	knows the basics of systems theory, properties of basic systems structures and how to solve simple identification, recognition and control tasks	P6U_W	P6S_WG	
K1EAC_W10	knows the basics of computer network technology, computer network protocols, design and configuration of computer networks	P6U_W	P6S_WG	
K1EAC_W11	knows the fundamental principles of optoelectronics in terms of generation, detection and processing of optical radiation	P6U_W	P6S_WG P6S_WK	
K1EAC_W12	knows the basic concepts of mechanical vibrations and acoustic waves and systems, and characterises the properties of electroacoustic transducers, devices and systems.	P6U_W	P6S_WG	P6S_WG
SKILLS (U)				
K1EAC_U01	solves and documents independently an engineering task using literature, materials and equipment, applies matrix calculus, vector calculus and differential and integral calculus, applies fast Fourier transform, performs operations on complex numbers	P6U_U	P6S_UW P6S_UU	P6S_UW
K1EAC_U02	can correctly and effectively apply the known principles and laws of physics to the qualitative and quantitative analysis of physical engineering problems	P6U_U	P6S_UW	P6S_UW
K1EAC_U03	knows how to use information techniques, to create object-oriented, multithreaded, graphic and mobile programs	P6U_U	P6S_UW	P6S_UW

K1EAC_U04	is able, according to given specifications and using adequate methods, techniques and tools (e.g. computer simulation), to design and manufacture simple electrical or electronic equipment	P6U_U	P6S_UW	P6S_UW
K1EAC_U05	is able to simulate and analyse basic automation and robotics objects using appropriate tools.	P6U_U	P6S_UW P6S_UK	P6S_UW
K1EAC_U06	is able to present the structure of modern telecommunication networks and configure the basic functionalities of selected systems	P6U_U	P6S_UW P6S_UK	P6S_UW
K1EAC_U07	is able to prepare and run software using the internal structure of microcontrollers	P6U_U	P6S_UW P6S_UU P6S_UO	
K1EAC_U08	is able to solve a given engineering task using his/her acquired knowledge and skills, and is able to acquire information from other sources in the process of self-study; while solving he/she also takes into account non-technical aspects; is able to create documentation of the solution and to present it in a clear and legible manner	P6U_U	P6S_UW	P6S_UW
K1EAC_U09	has the ability to represent expert and experimental knowledge in the form of block diagrams, graphs, sets of logical expressions, in particular the creation of input-output systems and their mathematical models	P6U_U	P6S_UW	P6S_UW
K1EAC_U10	Is able to distinguish between network devices and network services, be able to design IP addressing, be able to construct a simple computer network	P6U_U	P6S_UW P6S_UK	P6S_UW
K1EAC_U11	is able to carry out experiments in the field of laser and fibre optics technology. Can independently interpret the results obtained	P6U_U	P6S_UW P6S_UK	
K1EAC_U12	know how to carry out basic acoustic measurements and how to analyse and interpret the results of measurements.	P6U_U	P6S_UW P6S_UK	
K1EAC_U13	is able to use a variety of foreign language sources of information, in particular professional literature, and to integrate information obtained			

SOCIAL COMPETENCES (K)				
K1EAC_K01	is aware of the importance and understanding of the humanistic aspects and implications of engineering activities. learns about the effects of engineering activities on the environment, and the related social responsibility of science and technology.	P6U_K	P6S_KK	
K1EAC_K02	correctly identifies and solves dilemmas related to the profession; is aware of the social role of a graduate of a technical university. understands the need to formulate and convey to the society the information and opinions on the achievements of technology and other aspects of engineer's activity; he/she is able to convey such information and opinions in an understandable way, justifying different points of view.	P6U_K	P6S_KK, P6S_KR	
K1EAC_K03	understands the legal aspects and implications of engineering activities	P6U_K	P6S_KO	
K1EAC_K04	is able to work with a team on a complex engineering task taking various roles in the team, is able to perform the assigned tasks in accordance with the work schedule.	P6U_K	P6S_KO	
K1EAC_K05	is aware of the necessity of individual and team activities beyond engineering	P6U_K	P6S_KO	