Zał. Nr 2 do ZW 16/2020

Attachment no. 1. to the Program of Studies

ASSUMED LEARNING OUTCOMES

FACULTY: **Computer Science and Management**

MAIN FIELD OF STUDY: **Applied Computer Science**

EDUCATION LEVEL: first-level (~~licencjat~~/inżynier) studies ~~/ second-level studies~~ / ~~magister uniform studies~~*

PROFILE: general academic / ~~practical~~ *

Location of the main-field-of study:

Branch of science: **Nauki inżynieryjno-techniczne**

Discipline / disciplines (for several disciplines, please indicate the major discipline)
Informatyka techniczna i telekomunikacja

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 Applied Computer Science** After completion of studies, the graduate: Faculty of Computer Science and Management	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)				
KINF_W01	Has basic general knowledge in the field of selected branches of mathematics: mathematical analysis, linear algebra and analytic geometry, mathematical logic, discrete mathematics, probability theory, and mathematical statistics, that form the theoretical foundations necessary to solve IT engineering problems	P6U_W	P6S_WG	
KINF_W02	Has basic knowledge in the selected physics departments	P6U_W	P6S_WG	
KINF_W03	Knows and understands basic data structures, algorithms, and programming constructs and can implement them in various programming languages	P6U_W	P6S_WG	P6S_WG_inż
KINF_W04	He knows the basic programming paradigms and languages using these paradigms	P6U_W	P6S_WG	
KINF_W05	Has detailed knowledge of software lifecycle models and its processes as well as methodologies, good practices, notation, and support tools for software development	P6U_W	P6S_WG	P6S_WG_inż
KINF_W06	Has basic knowledge in the field of computer structure, organization and architecture	P6U_W	P6S_WG	P6S_WG_inż
KINF_W07	Has knowledge about programming various types of applications, e.g. mobile, web, database, or distributed	P6U_W	P6S_WG	P6S_WG_inż
KINF_W08	Has basic knowledge in the field of construction, operation and administration of operating systems	P6U_W	P6S_WG	P6S_WG_inż
KINF_W09	Has knowledge of computer networks, their architecture and the operation of selected network devices	P6U_W	P6S_WK	P6S_WG_inż
KINF_W10	Has basic knowledge in the field of IT systems security	P6U_W	P6S_WK	P6S_WG_inż

KINF_W11	Has knowledge of modeling different types of processes and knows the methods and techniques used in decision support systems	P6U_W	P6S_WK	P6S_WG_inż
KINF_W12	Knows and understands the architecture of database systems and the basic methods and tools for collecting, processing and retrieving information as well as extracting knowledge from data	P6U_W	P6S_WK	P6S_WG_inż
KINF_W13	Has systematic knowledge in the field of artificial intelligence, in particular methods of representing and processing knowledge.			P6S_WG_inż
KINF_W14	Has detailed knowledge of software and database design			P6S_WG_inż
KINF_W15	Has basic knowledge in the field of multimedia and multimedia systems			P6S_WG_inż
KINF_W16	He knows typical technologies and programming tools for software developments			P6S_WG_inż
KINF_W17	Has well-formed knowledge in the field of IT project management			P6S_WG_inż
KINF_W18	He knows current IT development trends			
KINF_W19	Has basic knowledge of managing the business activities; knows the general principles of creating and running various sorts of individual entrepreneurship			P6S_WK_inż
KINF_W20	Has basic knowledge in the field of protection of intellectual property and patent law			
KINF_W21	Has basic knowledge of humanities that is necessary to understand the social and philosophical conditions of engineering activities			
KINF_W22	He knows and understands the fundamental problems facing modern civilization			
SKILLS (U)				
KINF_U01	Is able to construct and implement algorithms using basic algorithms and data structures	P6U_U	P6S_UW	P6S_UW_inż
KINF_U02	Can choose and evaluate the usefulness of a programming paradigm to a problem and build an application that uses this paradigm	P6U_U	P6S_UW	P6S_UW_inż
KINF_U03	Can describe requirements and design - using the selected modeling language - a general software architecture and a database schema	P6U_U	P6S_UW	P6S_UW_inż

KINF_U04	Is able to implement, in accordance with the design, software and database for simple, typical applications and verify the correctness of the solution.	P6U_U	P6S_UW	P6S_UW_inż
KINF_U05	He can design and build simple logic circuits	P6U_U	P6S_UW	P6S_UW_inż
KINF_U06	Can apply an indicated analytical method and plan and conduct a simple engineering experiment or computer simulation; is able to carry out measurements and analyze their results, in particular of selected IT system components	P6U_U	P6S_UW	P6S_UW_inż
KINF_U07	He can configure basic devices and network software of computer networks	P6U_U	P6S_UW	P6S_UW_inż
KINF_U08	He can apply the specified security techniques for a given IT system	P6U_U	P6S_UW	P6S_UW_inż
KINF_U09	Is able to create and implement a schedule of works for developing a simple IT system and to pre-estimate the costs and time needed to implement this project.	P6U_U	P6S_UW	P6S_UW_inż
KINF_U10	Is able to formulate and solve complex and atypical problems and carry out tasks in conditions that are not fully predictable	P6U_U	P6S_UW	P6S_UW_inż
KINF_U11	Has the ability to program applications of various types, e.g. mobile, web and database	P6U_U	P6S_UW	P6S_UW_inż
KINF_U12	He can implement a simple multimedia product using carefully selected methods, techniques, and tools	P6U_U	P6S_UW	P6S_UW_inż
KINF_U13	He can apply selected technologies and programming tools	P6U_U	P6S_UW	P6S_UW_inż
KINF_U14	He has practical skills related to the administration of selected systems	P6U_U	P6S_UW	P6S_UW_inż
KINF_U15	Is able to describe and make a profound analysis of the functioning of existing IT solutions and evaluate these solutions	P6U_U	P6S_UW	P6S_UW_inż
KINF_U16	Can acquire information from literature, databases and other sources, also in English, among others for the purposes of self-education and raising professional competences, can integrate the obtained information, interpret it, draw conclusions, formulate and justify opinions	P6U_U	P6S_UW	
KINF_U17	Is able to develop documentation on the implementation of an engineering task, prepare a text containing a discussion of achieved results and present a short presentation using	P6U_U	P6S_UW	

	advanced information and communication techniques on the results of this engineering task			
KINF_U18	He can communicate using specialized terminology; take part in discussions, present and evaluate different opinions and stands	P6U_U	P6S_UK	
KINF_U19	Has language skills in the fields of science and scientific disciplines, relevant to the studied field of study, in accordance with the requirements set for the B2 level of the European System of Language Description	P6U_U	P6S_UK	
KINF_U20	Is able to plan and organize work both for an individual and for a team	P6U_U	P6S_UO	
KINF_U21	He can cooperate with other people as part of a team undertaking	P6U_U	P6U_UO	
KINF_U22	Has the ability to self-education, e.g. to improve his/her professional skills	P6U_U	P6S_UU	
SOCIAL COMPETENCES (K)				
KINF_K01	Is ready to critically evaluate his/her knowledge and acquired information	P6U_K	P6U_KK	
KINF_K02	He is conscious of knowledge significance in solving cognitive and practical problems; he recognises the need of consulting experts' opinions in case of difficulties with unassisted problem solving	P6U_K	P6U_KK	
KINF_K03	He follows the rules of professional ethics and demands it from others	P6U_K	P6U_KR	
KINF_K04	He is able to think and act in an entrepreneurial way, he is ready to take action for society	P6U_K	P6U_KO	

*delete as applicable