Zał. Nr 1 do ZW 78/2023

PROGRAM OF STUDIES

FACULTY: Information and Communication Technology
MAIN FIELD OF STUDY: Computer Engineering
BRANCH OF SCIENCE: Computer Science
DISCIPLINES: D1 Computer Engineering and Telecommunications

EDUCATION LEVEL: second-level studies
FORM OF STUDIES: full-time studies
PROFILE: general academic
LANGUAGE OF STUDY: english

Content:

Resolution no. … of the Senate of Wroclaw University of Science and Technology

In effect since 2024/2025

Załącznik nr 3 do ZW 77/2023
Załącznik nr 1 do programu studiów

ASSUMED LEARNING OUTCOMES

FACULTY: **Faculty of Information and Communication Technology**
MAIN FIELD OF STUDY: **Computer Engineering**
EDUCATION LEVEL: **second-level studies**
PROFILE: **general academic**

Location of the main-field-of study:

Branch of science: **Engineering and technology**

Discipline / disciplines (for several disciplines, please indicate the major discipline)

Computer Engineering and Telecommunications

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

… _INŻ – learning outcomes related to the engineer competences

Main field of study learning outcomes	Description of learning outcomes for the main-field-of study **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)				
K2ITE_W01	Has extended and in-depth knowledge of selected areas of mathematics and physics, necessary to understand issues in the field of the scientific discipline being studied.	P7U_W	P7S_WG	P7S_WG_INŻ
K2ITE_W02	He has knowledge in the field of creating and developing forms of individual entrepreneurship in the area appropriate for the studied field of study, has knowledge in the field of industrial property protection and copyright.	P7U_W	P7S_WK	P7S_WK_INŻ
K2ITE_W03	Has knowledge of development trends and new achievements in the field of IT.	P7U_W	P7S_WG P7S_WK	P7S_WG_INŻ P7S_WK_INŻ
K2ITE_W04	Knows the legal basis of information protection as well as the methods and IT tools used for information protection.	P7U_W	P7S_WG P7S_WK	P7S_WG_INŻ P7S_WK_INŻ
K2ITE_W05	Has knowledge of the use of information systems in various areas, knows the methods and algorithms supporting the design of such systems, current technologies and economic problems of IT investments.	P7U_W	P7S_WG	P7S_WG_INŻ
K2ITE_W06	Knows the methods and techniques of modeling, analysis and evaluation of information systems.	P7U_W	P7S_WG	P7S_WG_INŻ
K2ITE_W07	Has an ordered and theoretically founded knowledge of selected IT fields; knows and understands, in a greater extent, selected issues constituting advanced	P7U_W	P7S_WG	P7S_WG_INŻ

	detailed knowledge, appropriate for the education program within the selected specialization.			
K2ITE_W08	Has extended knowledge of machine learning and artificial intelligence methods.	P7U_W	P7S_WG	P7S_WG_INŻ
K2ITE_W09	Has extended and deepened knowledge of advanced programming techniques, including software design and development tools.	P7U_W	P7S_WG	P7S_WG_INŻ
SKILLS (U)				
K2ITE_ U01	Has knowledge, skills and competences in the field of a foreign language in accordance with the requirements specified for the additional level B2 + ESOKJ and higher in the field of scientific and technical language related to the studied discipline and related issues.	P7U_U	P7S_UK	
K2ITE_U02	Can think critically and argue his opinion.	P7U_U	P7S_UK	
K2ITE_U03	Is able to perform a design task for the needs of a problem-oriented IT system, integrating knowledge from various fields and using a system approach and existing or conceptually new IT approaches and tools.	P7U_U	P7S_UW P7S_UO	P7S_UW_INŻ
K2ITE_U04	He can use appropriate methods and programming tools for modeling, analysis and evaluation of information systems.	P7U_U	P7S_UW	P7S_UW_INŻ
K2ITE_U05	Can define the directions and methods of acquiring knowledge; gather information; make the right choice of sources and information derived from them; make a critical assessment and creative interpretation of the acquired knowledge; plan your own lifelong learning.	P7U_U	P7S_UU	P7S_UW_INŻ
K2ITE_U06	Is able to present topics, present individual phases of an implemented project (e.g. master thesis), justify conclusions; knows the rules of creative discussion.	P7U_U	P7S_UK	
K2ITE_U07	Is able to independently carry out a project (e.g. diploma thesis) containing research aspects, including: • can obtain information from literature, databases and other sources, integrate it, interpret and critically evaluate,	P7U_U	P7S_UW	P7S_UW_INŻ

	• can formulate and test hypotheses related to research problems, • can use analytical, simulation and experimental methods to solve problems, • can plan and carry out experiments, including computer simulations, • can integrate knowledge from various fields and disciplines and apply a systemic approach, also taking into account non-technical aspects, • is able to assess the usefulness and the possibility of using new achievements (techniques and technologies), • can propose modifications and improvements to existing technical solutions, • is able to interpret the obtained research results, draw appropriate conclusions and formulate recommendations, • can write a master's thesis in accordance with formal requirements.			
K2ITE_U08	Is able to use the acquired detailed knowledge appropriate for the education program within the selected specialization - to formulate and solve complex and unusual problems and perform tasks in an innovative way in unpredictable conditions.	P7U_U	P7S_UW P7S_UO	P7S_UW_INŻ
K2ITE_U09	Can design, implement and manage data storage and processing systems.	P7U_U	P7S_UW	P7S_UW_INŻ
K2ITE_U10	He has advanced programming skills, is able to use advanced tools for designing, testing and implementing the software.	P7U_U	P7S_UW	P7S_UW_INŻ
SOCIAL COMPETENCES (K)				
K2ITE_K01	Is aware of the social consequences of engineering activities and the related responsibility for the decisions made. Understands the need to provide the society with information and opinions on the achievements of technology and other aspects of the activities of a technical university graduate. Understands the role of the mass-media. Is ready to	P7U_K	P7S_KR P7S_KO	

	create models of proper conduct in the social and professional environment.			
K2ITE_K02	Can think and act in a critical, creative and entrepreneurial manner, and properly prioritize the implementation of a complex task.	P7U_K	P7S_KK P7S_KO	
K2ITE_K03	Is aware of the importance and understanding of social and non-technical aspects of computerization.	P7U_K	P7S_KK P7S_KO P7S_KR	
K2ITE_K04	Is able to cooperate with the team in the implementation of a complex engineering task; to fulfill the entrusted role in the team; to prioritize tasks.	P7U_K	P7S_KR	