

## **PROGRAM STUDIÓW**

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|---|--|
| <b>WYDZIAŁ:</b>                         | <b>Informatyki i telekomunikacji</b>               |
| <b>KIERUNEK STUDIÓW:</b>                | <b>Informatyka techniczna</b>                      |
| <b>Przyporządkowany do dyscypliny:</b>  | <b>D1 Informatyka techniczna i telekomunikacja</b> |
| <b>POZIOM KSZTAŁCENIA:</b>              | <b>studia drugiego stopnia</b>                     |
| <b>FORMA STUDIÓW:</b>                   | <b>stacjonarna</b>                                 |
| <b>PROFIL:</b>                          | <b>ogólnoakademicki</b>                            |
| <b>JĘZYK PROWADZENIA STUDIÓW:</b>       | <b>polski/angielski</b>                            |
| <b>OBOWIAZUJE OD CYKLU KSZTAŁCENIA:</b> | <b>2022/2023</b>                                   |

### Zawartość:

1. Zakładane efekty uczenia się – zał. nr 1 do programu studiów
2. Opis programu studiów – zał. nr 2 do programu studiów
3. Plan studiów – zał. nr 3 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<br><b>Computer Engineering</b><br>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 |
| <b>KNOWLEDGE (W)</b>                  |   |  |   |   |
| 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_INŽ  |
| 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_INŽ  |
| K2ITE_W03                             | Has knowledge of development trends and new achievements in the field of IT.  | P7U_W                                      | P7S_WG<br>P7S_WK  | P7S_WG_INŽ<br>P7S_WK_INŽ  |
| 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<br>P7S_WK  | P7S_WG_INŽ<br>P7S_WK_INŽ  |
| 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_INŽ  |
| K2ITE_W06                             | Knows the methods and techniques of modeling, analysis and evaluation of information systems.   | P7U_W                                      | P7S_WG  | P7S_WG_INŽ  |
| 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_INŽ  |

|                   |  |       |                  |            |
|-------------------|--|-------|------------------|------------|
|                   | 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_INŽ |
| K2ITE_W09         | Has extended and deepened knowledge of advanced programming techniques, including software design and development tools.   | P7U_W | P7S_WG           | P7S_WG_INŽ |
| <b>SKILLS (U)</b> |  |       |                  |            |
| 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<br>P7S_UO | P7S_UW_INŽ |
| K2ITE_U04         | He can use appropriate methods and programming tools for modeling, analysis and evaluation of information systems.   | P7U_U | P7S_UW           | P7S_UW_INŽ |
| 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_INŽ |
| 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: <ul style="list-style-type: none"> <li>• can obtain information from literature, databases and other sources, integrate it, interpret and critically evaluate,</li> </ul> | P7U_U | P7S_UW           | P7S_UW_INŽ |

|                               |  |       |                  |            |
|-------------------------------|--|-------|------------------|------------|
|                               | <ul style="list-style-type: none"> <li>• can formulate and test hypotheses related to research problems,</li> <li>• can use analytical, simulation and experimental methods to solve problems,</li> <li>• can plan and carry out experiments, including computer simulations,</li> <li>• can integrate knowledge from various fields and disciplines and apply a systemic approach, also taking into account non-technical aspects,</li> <li>• is able to assess the usefulness and the possibility of using new achievements (techniques and technologies),</li> <li>• can propose modifications and improvements to existing technical solutions,</li> <li>• is able to interpret the obtained research results, draw appropriate conclusions and formulate recommendations,</li> <li>• can write a master's thesis in accordance with formal requirements.</li> </ul> |       |                  |            |
| 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<br>P7S_UO | P7S_UW_INŽ |
| K2ITE_U09                     | Can design, implement and manage data storage and processing systems.  | P7U_U | P7S_UW           | P7S_UW_INŽ |
| 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_INŽ |
| <b>SOCIAL COMPETENCES (K)</b> |  |       |                  |            |
| 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<br>P7S_KO |            |

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|           | 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<br>P7S_KO           |  |
| K2ITE_K03 | Is aware of the importance and understanding of social and non-technical aspects of computerization.  | P7U_K | P7S_KK<br>P7S_KO<br>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                     |  |