| **Programme: INFORMATICS** |
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| Level of studies: I[st] degree |
| Polish Qualifications Framework PRK level: 6 |
| Programme profile: general academic profile |
| Field of science/arts: Natural sciences, Engineering and technology, Social sciences, Humanities |
| Discipline/Disciplines[i]: computer and information sciences - discipline indicated, information and communication technology, mathematics, philosophy, management and quality studies |

| *Learning outcomes for general university courses (foreign language classes, physical education, entrepreneurship, university mission courses) are specified in the relevant resolutions of the Senate* |
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| Symbol of the programme learning outcome | **Programme learning outcomes** | Reference to universal first stage descriptors – PRK levels 6-8[ii] | Reference to second stage descriptors - PRK levels 6-8[iii] | Reference to second stage descriptors - PRK levels 6 and 7 in the field of art sciences [iv] | Reference to second stage descriptors - PRK levels 6 and 7 for engineering qualifications [v] |
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| | **Knowledge: Graduate knows and understands** | **Descriptor symbol** | **Descriptor symbol** | **Descriptor symbol** | **Descriptor symbol** |
| K_W01 | The student understands the importance of informatics and its applications | P6U_W1 | P6S_WK1 | | |
| K_W02 | The student has knowledge about mathematical analysis, algebra and geometry, useful when formulating and solving simple tasks associated with the computer science | P6U_W1<br>P6U_W2 | P6S_WG1<br>P6S_WK2 | | |
| K_W03 | The student is familiar with the selected algorithms and examples of their practical implementation | P6U_W1 | P6S_WG1 | | |
| K_W04 | The student has basic knowledge of building and managing computer systems, operating systems and computer networks, | P6U_W1 | P6S_WG1 | | |
| K_W05 | The student knows, at a basic level, a selected software package for symbolic computations | P6U_W1 | P6S_WG1 | | |

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| K_W06 | The student has general knowledge of theoretical computer science, algorithms designing and programming, software engineering, | P6U_W1 | P6S_WG1 | | |
| K_W07 | The student knows the principles of health and safety regulations when working with computers | P6U_W2 | P6S_WK2 | | |
| K_W08 | The student has basic knowledge of intellectual property, copyright and ethical principles of an IT engineer | P6U_W2 | P6S_WK2 | | |
| K_W09 | The student has knowledge discrete mathematics, probability theory and statistics useful when formulating and solving simple tasks associated with the computer science | P6U_W1<br>P6U_W2 | P6S_WG1<br>P6S_WK2 | | |
| K_W10 | The student has general knowledge of data bases, data processing and analysis, artificial intelligence | P6U_W1 | P6S_WG1 | | |
| K_W11 | The student has general knowledge of computer graphics, animation and image processing | P6U_W1 | P6S_WG1 | | |
| | **Skills: a graduate can** | **Descriptor symbol** | **Descriptor symbol** | **Descriptor symbol** | **Descriptor symbol** |
| K_U01 | The student can use chosen operating systems and application/ utility software | P6U_U1 | P6S_UW1 | | |
| K_U02 | The student can on his/her own gain and use helpful information included in technical documentation, help files, the Internet and available literature when solving particular computer science problems | P6U_U1<br>P6U_U2 | P6S_UW1<br>P6S_UU1 | | |
| K_U03 | The student can use, at its basic level, a selected software package that can be used for symbolic computations | P6U_U1 | P6S_UW1 | | |
| K_U04 | The student can utilize technical language used in computer science, is able to communicate employing various communication methods | P6U_U3 | P6S_UW1<br>P6S_UK1 | | |
| K_U05 | The student can design www websites | P6U_U1 | P6S_UW1 | | |
| K_U06 | The student can use basic concepts and methods of number systems, encoding, data processing and protection | P6U_U1 | P6S_UW1 | | |
| K_U07 | The student can analyze algorithms and programs written in an imperative language of programming from the point of view of their correctness and computational complexity. He or she can present and justify the results of the analysis | P6U_U3 | P6S_UW1<br>P6S_UK2 | | |
| K_U08 | The student can develop and record simple algorithms which solve problems from various areas of sciences | P6U_U1 | P6S_UW1 | | |
| K_U09 | The student can apply basic recursive, sorting and searching algorithms, and implement them in a chosen programming language and a given development environment | P6U_U1 | P6S_UW1 | | |

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| K_U10 | The student can apply data structures, implement them and perform operations on them | P6U_U1 | P6S_UW1 | | |
| K_U11 | The student can apply the principles of creating of structured and object-oriented programming | P6U_U1 | P6S_UW1 | | |
| K_U12 | The student can write a simple application in an object-oriented programming language, in both graphical user and text interface | P6U_U1 | P6S_UW1 | | |
| K_U13 | The student can design software using the principles of software engineering | P6U_U1 | P6S_UW1 | | |
| K_U14 | The student can draw up the basic documentation during the process of an IT project realization | P6U_U1 | P6S_UW1 | | |
| K_U15 | The student can create simple network services and make them available to the users through various network protocols | P6U_U1 | P6S_UW1 | | |
| K_U16 | The student can apply basic principles of artificial intelligence | P6U_U1 | P6S_UW1 | | |
| K_U17 | The student can work on his/her own and in a team, understands the need of systematic work over long-term projects. The student can appropriately choose priorities within a given IT project. | P6U_U1<br>P6U_K2 | P6S_UO1<br>P6S_UO2 | | |
| K_U18 | The student understands the need of further training and improvement professional competences | P6U_U2 | P6S_UU1 | | |
| K_U19 | The student can run functional tests | P6U_U1 | P6S_UW1 | | |
| K_U20 | The student is able to implement selected numerical methods and selected optimization methods in practice | P6U_U1 | P6S_UW1 | | |
| K_U21 | The student can use logic, methods of providing proof and recursion in order to solve problems in the computer science | P6U_U1 | P6S_UW1 | | |
| K_U22 | The student can use acquired knowledge about mathematics to describe processes, create models, write algorithms and other activities in informatics | P6U_U1 | P6S_UW1 | | |
| K_U23 | The student can use English at the level which enables him/her to use software and hardware documentation | P6U_U1 | P6S_UW1 | | |
| K_U24 | The student can build and administer a simple computer network | P6U_U1 | P6S_UW1 | | |
| K_U25 | The student is able to create visual content by using standard graphic API and introduce basic transformations, implement selected procedures of visual content transformations | P6U_U1 | P6S_UW1 | | |
| K_U26 | The student can construct simple questions in SQL language, and prepare a relational model of databases | P6U_U1 | P6S_UW1 | | |
| K_U27 | The student can build a simple database system by using at least one of the common systems of database managing | P6U_U1 | P6S_UW1 | | |

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| K_U28 | The student can draw simple statistical conclusions | P6U_U1 | P6S_UW1 | | | |
| K_U29 | The student is able to prepare himself/herself for standard writing tests concerning the computer science | P6U_U3 | P6S_UW1<br>P6S_UK1 | | | |
| K_U30 | The student can present general and detailed informatics issues in a clear, comprehensive way | P6U_U3 | P6S_UK1 | | | |
| | **Social competence: a graduate is ready to** | **Descriptor symbol** | **Descriptor symbol** | **Descriptor symbol** | **Descriptor symbol** | |
| K_K01 | Is ready to assess the level of his or her knowledge and skills.<br>The student can conduct a critical evaluation of the received information. | P6U_K2 | P6S_KK1 | | | |
| K_K02 | He can show initiative and efficiency while working on a project | P6U_K2<br>P6U_K1 | P6S_KO1<br>P6S_KO2 | | | |
| K_K03 | Can identify and settle the job-related dilemmas with regard to legal and ethical principles | P6U_K1 | P6S_KR1 | | | |
| K_K04 | He understands the social aspects of the use of acquired knowledge and the related responsibility | P6U_K1<br>P6U_K2 | P6S_KO1<br>P6S_KR1 | | | |
| K_K05 | Is prepared undertake actions aiming at raising awarness of the significance of contemporary IT tools and the dangers of utilizing them | P6U_K1<br>P6U_K2 | P6S_KO1<br>P6S_KO2 | | | |
| K_K06 | Is prepared to solve practical problems independently and in justified cases with an assistance of an expert | P6U_K2 | P6S_KK2 | | | |

[i] In the case of programmes assigned to more than one discipline a leading discipline should be indicated.

[ii] Universal first stage descriptors for PRK levels 6-8 – Act of 22 December 2015 on the Integrated Qualifications System (Journal of Law of 2016, item 64).

[iii] Second stage descriptors for PRK levels 6-8 typical for qualifications awarded by higher education institutions – Regulation of MNiSW of 14 November 2018 r. - part I.

[iv] Second stage descriptors for PRK levels 6-8 typical for qualifications awarded by higher education institutions in the field of art sciences. – Regulation of MNiSW of 14 November 2018 r. - part II.

[v] Second stage descriptors for PRK levels 6-8 typical for engineering qualifications awarded by higher education institutions – Regulation of MNiSW of 14 November 2018 r. - part III.