Learning outcomes of the 1st degree engineering studies - IT

Learning outcomes in the area of knowledge	Learning outcomes in the area of practical skills	Learning outcomes in the area of social skills
K_W01 has basic and extended knowledge of mathematical analysis and linear algebra with geometry, useful for solving complex IT problems	K_U01 has the ability to use the apparatus of mathematical analysis and the methods of linear algebra to formulate, solve and analyse the results of IT problems.	K_K01 is aware of the need for continuous training and updating of their skills in the field of modern information technologies.
K_W02 has general knowledge of probabilistic methods and the basics of statistical data analysis.	K_U02 has the ability to use probabilistic methods and simple statistical inference to calculate the reliability of hardware and software systems.	K_K02 has the ability to learn on his own.
K_W03 has a general knowledge of discrete mathematics methods useful for describing and modelling problems in Computer Science	K_U03 has the ability to use logic and recursion in order to solve the IT problems.	K_K03 can work in a team.
K_W04 has a basic knowledge of classical physics and quantum physics, necessary to understand electronics and electrical engineering, as well as to analyse and simulate computer physical processes.	K_U04 has the ability to analyse and explain physical phenomena occurring in computer systems.	K_K04 is able to define priorities for the timely implementation of a given task.
K_W05 has basic knowledge of frequency analysis of signals and digital and analog modulation / demodulation methods.	K_U05 has the ability to create simple models of electronic circuits and conduct measurement experiments and computer simulations in order to predict events taking place in them.	K_K05 acts in accordance with the principles of ethics and observes the principles of intellectual property protection.
K_W06 has extended and in-depth knowledge of electrical engineering, measurement and electronics necessary to	K_U06 has the ability to use analytical and simulation methods to solve IT problems and is able to interpret the obtained results.	K_K06 preserves and spreads a culture of integrity and high work standards.

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understand the structure and operation of computer equipment.		
K_W07 has a structured and extended detailed knowledge of languages and modern programming techniques and practices.	K_U07 has the ability to use programming languages to write simple computer programs.	K_K07 is able to use the acquired knowledge and skills in everyday professional career.
K_W08 has a general knowledge of the rules of number conversion and arithmetic operations performed in digital systems.	K_U08 has the ability to install and maintain software.	K_K08 can objectively evaluate the effects of his work and make appropriate changes.
K_W09 has theoretically underpinned general knowledge of data structures, the basics of algorithms and the analysis of computational complexity of algorithms.	K_U09 has the ability to select and implement basic data structures as well as construct and analyse the complexity of algorithms using known algorithmic techniques.	K_K09 uses the language of effective communication to solve problems and exchange knowledge.
K_W10 has extensive knowledge of digital techniques and the organization and architecture of computer systems.	K_U10 has the ability to design intelligent IT systems and find solutions to IT problems using artificial intelligence techniques.	K_K10 can think and act creatively and enterprisingly.
K_W11 has extended and in-depth knowledge of the principles of operation of operating systems.	K_U11 has the ability to create software for the encryption and decryption of information.	K_K11 accepts and respects different views and is able to take an independent and justified position on important social issues.
K_W12 has a basic and extended knowledge of modern cellular networks and ICT technologies.	K_U12 has the ability to design and implement simple sequential and combinational systems.	
K_W13 has extended general knowledge in the field of issues related to modern technologies of computer networks concerning their structure and operation and the issues of security of sharing information in wired and wireless networks.	K_U13 has skills in the operation and configuration of operating systems.	

K_W14 has expanded knowledge of issues related to the computer systems security.	K_U14 has the ability to design cellular network architecture, traffic dimensioning and developing assumptions for the implementation of telecommunications systems.	
K_W15 has extensive knowledge of the methods and tools used in 2D and 3D computer graphics, in 2D and 3D animation, multimedia and human-computer communication.	K_U15 has skills in the design and implementation of LAN / WAN hardware computer networks and the implementation of wireless solutions, the use of network software and the security of using network services.	
K_W16 has basic and extended knowledge of CAD / CAM techniques, 3D modelling tools and computer design.	K_U16 has the ability to adjust programming tools to solve various types of problems as well as test and debug ready-made programs.	
K_W17 has general knowledge of information encryption and decryption techniques.	K_U17 has the ability to use tools in order to create a graphical user interface for various types of applications	
K_W18 has extensive knowledge in the field of database design and management.	K_U18 has the ability to select tools and IT techniques to create graphic models and useful computer animations	
K_W19 has general theoretical knowledge in the field of inference methods and artificial intelligence.	K_U19 has the ability to program simple internet applications.	
K_W20 has general knowledge of the design, implementation and testing of IT systems.	K_U20 has the ability to create and manage a database and data warehouse, taking data integrity into account.	
K_W21 has extensive knowledge of the design methodology and embedded systems programming techniques.	K_U21 has the ability to use the version control systems software.	

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K_W22 has a general knowledge of the ethical and legal conditions of the work of an IT specialist and knows the provisions on the protection of personal data and intellectual property.	K_U22 has the ability to develop a software project and specify software requirements.	
K_W23 has basic knowledge of economics and designing modern E-Commerce systems.	K_U23 has skills in building and programming simple embedded systems.	
K_W24 has a basic knowledge of the functioning mechanisms of internet advertising and modern e-marketing systems.	K_U24 has the ability to create designs for the implementation of computer arithmetic operations.	
K_W25 has basic knowledge of management and business skills.	K_U25 has the ability to apply the appropriate type of software license to the created computer programs.	
K_W26 has basic and extended knowledge in the field of web analytics.	K_U26 has the ability to use IT tools and techniques to analyze and visualize internet data.	
K_W26 has basic and extended knowledge of the design and programming of modern internet systems and web applications.	K_U26 has the ability to use embedded systems to solve IT problems.	
K_W27 has well-established knowledge of IT terminology and English grammatical structures, allowing for the correct formulation and transfer of information in oral and written form.	K_U27 has the ability to create professional multimedia presentations.	
K_W28 has a well-established knowledge of computer game development methodology	K_U28 has computer game programming skills	
K_W29 has knowledge of the design and life cycles of information systems.	K_U29 has the ability to program and manage logistics systems	

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K_W30 has a basic and extended knowledge of the identification of requirements for IT systems and the classification of tools supporting software development.	K_U30 has the basic ability to create and optimize business models for specific economic conditions.	
K_W31 He knows the basic safety rules related to working on a computer	K_U31 has English language skills (at the basic level / B2 level) enabling the preparation and presentation of a paper or documenting issues related to IT.	

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