

Profile
of the educational program Computer Science
specialty 122 Computer Science

1 - General information	
Full name of higher education institution	O.M.Beketov National University of Urban Economy in Kharkiv O.M.
Higher education degree and qualification name in original language	Master Master of Computer Science
Official name of educational program	Computer Science
Diploma type and educational program amount	Master's degree, single. 90 ECTS credits, training period 1 year 4 months
Presence of accreditation	Accredited by NAQA, Ukraine. Accreditation certificate of the educational program - 61, valid until 23.12.2024
Cycle/Level	Second (Master's) Level Ukrainian NQF - Level 7 FQ-EHEA - second cycle EQF LLL - Level 7
Prerequisites	Availability of an educational degree of bachelor, specialist, master's degree in another specialty
Teaching language(s)	Ukrainian, English
The term of the educational program	5 years
URL for permanent placement of the educational program description	https://knit.kname.edu.ua/
2 - The purpose of the educational program	
Training of professionals capable of solving tasks of a research and/or innovative nature in the field of computer science and education	
3 - Characteristics of the educational program	
Subject Area	<i>Object(s) of study and/or activity:</i> Processes of collecting, representing, processing, storing, transmitting, and accessing information in information and computer systems. <i>Learning objectives:</i> To acquire the ability to solve research and/or innovative problems in the field of computer science. <i>Theoretical content of the subject area:</i> Modern models, methods, algorithms, technologies, processes, and techniques for obtaining,

	<p>representing, processing, analyzing, transmitting, and storing data in information and computer systems.</p> <p><i>Methods, techniques, and technologies:</i> Methods and algorithms for solving theoretical and applied problems in computer science; mathematical and computer modeling, modern programming technologies; methods for collecting, analyzing, and consolidating distributed information; technologies and methods for designing, developing, and ensuring the quality of information technology components; methods of computer graphics and data visualization technologies; knowledge engineering technologies, CASE technologies for modeling and designing IT.</p> <p><i>Tools and equipment:</i> Distributed computing systems; computer networks; mobile and cloud technologies, database management systems, operating systems, tools for developing information systems and technologies.</p>
Orientation of the educational program	Educational and professional
The focus of the educational program and specialization	<p>Training of professionals capable of solving complex specialized problems and practical problems in the field of computer science and information technologies, which involves the use of theories and methods of computer science and is characterized by complexity and uncertainty of conditions.</p> <p><i>Keywords:</i> information, system, technology, computer, program, programming, model, modeling, object-oriented programming, database, knowledge base</p>
Features of the program	Training of professionals in the field of computer science, having in-depth knowledge of the organization of design and implementation of information systems at urban facilities for the implementation of a strategy for building a "smart city", based on computing intelligence, machine learning, electronic management technologies.
4 - The suitability of graduates to employment and further education	
Employment suitability	<p>Professional activity as a specialist in the development of mathematical, information and software information systems, in the field of information technology, as well as administrator of databases and systems. Graduates can work in professions according to the current edition of the National Classifier of Ukraine: (CC 003:2010):</p> <p>2131.1 Research staff (computer systems)</p> <p>2131.2 Developers of computing systems</p> <p>2132.1 Research staff (programming)</p> <p>2132.2 Developers of computer programs</p> <p>2310.2 Other teachers of higher education institutions</p> <p>2321 Teachers of professional (vocational and technical) education institutions</p> <p>2322 Teachers of vocational pre-higher education institutions</p>
Further education	Master can continue education at the third (educational and scientific) level of higher education, as well as improve qualifications and receive additional postgraduate education

5 - Teaching and evaluation	
Teaching and learning	<p>Student-centered learning, self-study, (personal-oriented, humanistic, socially-practically-oriented, problematic-oriented).</p> <p>Teaching and learning includes: lectures and practical classes, independent training, project work, individual consultations with teachers, practice and performance of master's thesis.</p>
Evaluation	<p>Oral and written surveys, test tasks, graphic works, term works and projects, practice reports, oral and written examinations, differentiated tests, protection of qualification work (master's degree).</p> <p>The evaluation system is carried out on the ETS scale by conducting oral and written examinations, tests, practices, organization of presentations, project work, etc.</p>
6 - Program competencies	
Integral competence	Ability to solve research and innovation problems in the field of computer science.
General competences (GC) defined by the standard of higher education for the specialty	<p>GC01. Ability for abstract thinking, analysis and synthesis.</p> <p>GC02. Ability to apply knowledge in practical situations.</p> <p>GC03. Ability to communicate in the state language both orally and in writing.</p> <p>GC04. Ability to communicate in a foreign language.</p> <p>GC05. Ability to learn and acquire modern knowledge.</p> <p>GC06. Ability to be critical and self-critical.</p> <p>GC07. Ability to generate new ideas (creativity)</p>
Professional competencies of the specialty (PC), defined by the standard of higher education for the specialty	<p>PC01. Understanding of the theoretical foundations of computer science.</p> <p>PC02. Ability to formalize the subject area of a specific project in the form of a corresponding information model.</p> <p>PC03. Ability to use mathematical methods to analyze formalized models of the subject area.</p> <p>PC04. Ability to collect and analyze data (including large datasets) to ensure the quality of project decision-making.</p> <p>PC05. Ability to develop, describe, analyze, and optimize architectural solutions for information and computer systems of various purposes.</p> <p>PC06. Ability to apply existing and develop new algorithms for solving problems in the field of computer science.</p> <p>PC07. Ability to develop software according to specified requirements, considering available resources and constraints.</p> <p>PC08. Ability to develop and implement software development projects, including in unpredictable conditions, with vague requirements, and the need to apply new strategic approaches, using software tools to organize teamwork on the project.</p> <p>PC09. Ability to develop and administer databases and knowledge bases.</p> <p>PC10. Ability to assess and ensure the quality of IT projects, information, and computer systems of various purposes, apply international standards for assessing the quality of software for information and computer systems, and models for assessing the maturity of the processes of developing information and computer systems.</p> <p>PC11. Ability to initiate, plan and implement the processes of developing information and computer systems and software, including its</p>

	development, analysis, testing, system integration, implementation and support.
7 - Program learning outcomes	
Program learning outcomes (LO) defined by the standard of higher education for the specialty	<p>LO1. Have specialized conceptual knowledge that includes current scientific achievements in the field of computer science and is the basis for original thinking and conducting research, critical thinking of problems in the field of computer science and at the border of fields of knowledge.</p> <p>LO2. Have specialized computer science problem-solving skills necessary for conducting research and/or conducting innovative activities to develop new knowledge and procedures.</p> <p>LO3. Convey clearly and unambiguously own knowledge, conclusions and arguments in the field of computer science to specialists and non-specialists, in particular to people who are studying.</p> <p>LO4. Manage work processes in the field of information technologies, which are complex, unpredictable and require new strategic approaches.</p> <p>LO5. Evaluate the results of the activities of teams and teams in the field of information technologies, to ensure the effectiveness of their activities.</p> <p>LO6. Develop a conceptual model of an information or computer system.</p> <p>LO7. Develop and apply mathematical methods for the analysis of information models.</p> <p>LO8. Develop mathematical models and methods of data analysis (including large data).</p> <p>LO9. Develop algorithmic and software for data analysis (including large data).</p> <p>LO10. Design architectural solutions of information and computer systems for various purposes</p> <p>LO11. Create new algorithms for solving problems in the field of computer science, evaluate their effectiveness and limitations on their application.</p> <p>LO12. Design and maintain databases and knowledge.</p> <p>LO13. Assess and ensure the quality of information and computer systems for various purposes.</p> <p>LO14. Test the software.</p> <p>LO15. Identify the needs of potential customers regarding the automation of information processing.</p> <p>LO16. Conduct research in the field of computer science.</p> <p>LO17. Identify and eliminate problematic situations during software operation, formulate tasks for its modification or reengineering.</p> <p>LO18. Collect, formalize, systematize and analyze needs and requirements for an information or computer system, that is developed, operated or maintained</p> <p>LO19. Analyze the current state and global trends in the development of computer sciences and information technologies</p>
8 - Resources for the program implementation	
Program staff	High quality level implementation of the program is provided by a qualified scientific and pedagogical staff, which includes PhDs and ScDs, professors, associate professors, including those with B-2 level English certificates. All the teachers of the graduating department have powerful practical experience in the field of information technology.

Material and technical support	The educational process is fully provided by the classroom fund, administrative and auxiliary premises. Specialized computer laboratories of the department have both modern equipment and software (Microsoft 365, Visual Studio Community 2019, SQL Server Management Studio 18, Google Chrome, Opera, Internet Explorer, GIMP Paint.NET, SketchUp, Linux OS, Geany, NetBeans, GIMP, Apache, PHP), and broadband Internet access. For lectures, auditoriums with multimedia equipment are used. Specialized laboratories are used for practical classes, including "Laboratory of information systems modeling", "Laboratory of Corporate Network Technologies", "Laboratory of Information Technologies", "Laboratory of Artificial Intelligence and Big Data Processing".
Information, educational and methodological support	Educational program Computer Science is provided with educational materials that are available for students in the reading rooms of the scientific library of the university http://library.kname.edu.ua/index.php/uk/ , equipped with computers with internet and local network of the University, in the digital repository http://eprints.kname.edu.ua , in MS Teams, on the portal of the Center for Distance Learning http://dl.kname.edu.ua Students have free access to modern professional literature and periodicals; Scopus and Web of Science databases; Springer resources; ScienceDirect databases from Elsevier publishing house; on the ScienceDirect platform - up to 39 thousand e-books and a collection of 2088 electronic monographs 2020-2021 editions.
9 - Academic mobility	
National credit mobility	In accordance with the Regulations on academic mobility of students, postgraduates, doctoral students, scientific-pedagogical and scientific workers of O.M. Beketov NUUE.
International Credit Mobility	O.M. Beketov NUUE has 5 existing agreements under Erasmus + International Credit Mobility with the following foreign universities: 1) Middle East Technical University, Ankara, Turkey. 2) Aristotle University of Thessaloniki, Thessaloniki, Greece 3) University of Nova Gorica, Nova Gorica, Slovenia 4) The Estonian University of Life Sciences, Tartu, Estonia 5) Lodz University of Technology, Lodz, Poland
Education of foreign applicants for higher education	In accordance with the Rules of admission to O.M. Beketov NUUE.