

**Passport of the educational program**  
**6B06124 «Software Engineering»**

Code and classification of the field of education	6B06 Information and communication technologies
Code and classification of the direction of training	6B061 Information and communication technologies
Number and name of the group of the educational program	6B06124 «Software Engineering»
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Purpose of the program	The purpose of this educational program is to train specialists who are competitive in the labor market, who have the skills to install, configure and maintain the system, tool and application software, computing equipment and computer systems, who are fluent in programming languages such as PHP, C ++, Java, JavaScript, Python.
Distinctive features of the educational program	<ol style="list-style-type: none"> <li>1. There is a programming school "Make IT", which allows you to implement student IT ideas. Students on the basis of "Make IT" create technological software products for further implementation as startups at the Astana Hab site.</li> <li>2. "Make IT" cooperates with Astana Hab in the implementation of two programs: <ol style="list-style-type: none"> <li>1) TechOrda</li> <li>2) Technological entrepreneurship</li> </ol> </li> <li>3. There are author's courses in the following areas: <ol style="list-style-type: none"> <li>1) "Production projects in Java"</li> <li>2) Web developer</li> <li>3) Gamedev on Unity</li> </ol> </li> </ol>
Availability of accreditation	HE-SA-000114
Learning Outcomes	<p>A matrix is being formed for correlating the learning outcomes of the educational program with the competencies being formed:</p> <p>ON1 - analyze the basic theoretical and practical skills of system programming and operating systems at the program development level, develop documentation for the artificial intelligence system and its parts and robotics. Evaluate the effectiveness of the applied hardware and software means of information security, apply the basic models and means of information transmission to optimize modern computer systems.</p> <p>ON 2 - change the configuration, understand the client's requests and implement them in the 1C program.</p> <p>ON3 - formulate technical requirements, taking into account the functions performed by computing systems, and justify a rational architecture, determine tools for the performance of computing systems, monitor technological operations carried out by IoT devices to increase the predictability of their operation, create addressing of a computer network, diagnose and restore the performance of computer systems and complexes.</p> <p>ON4 - have a detailed knowledge of the basics of programming procedures and functions, a PC and its basic technical characteristics and functional capabilities; professional problems in the field of computing and telecommunications.</p>

	<p>ON5 - evaluate the proposed solutions to improve business processes and / or ICT projects of the organization.</p> <p>ON6 - connect the stages of solving a problem on a computer, data types; basic constructions of the studied programming language Python; principles of structured and modular programming; principles of object-oriented programming.</p> <p>ON7 - demonstrate knowledge of the requirements for the design of documentation adopted in professional communication, an understanding of oral speech within the professional field, select the necessary information from various sources.</p> <p>ON8 - to formulate systematic knowledge about modern programming languages, methods, and tools for software development, analyze tasks in programming languages, set up development tools, conduct reviews of software code, develop requirements of various types for software.</p> <p>ON9 - have a good understanding of mathematics, statistics, mathematical models when solving problems, numerical methods and algorithms for solving problems.</p> <p>ON10 - demonstrate knowledge and skills of using fundamental physical laws and theories, as well as methods of physical research, solving typical problems and using analogs between phenomena of different nature.</p> <p>ON11 - analyze general information about the element base of circuitry, functional units, calculation and design of electronic devices, circuits and devices of various functional purposes in accordance with the terms of reference and using design automation tools, principles of building microprocessor systems, program-logic model of microcontrollers.</p> <p>ON 12 - use the means of modern computing technology for the foundations of cloud technologies and computer modeling;</p> <p>ON13 - apply machine learning methods to solve applied problems, apply mathematical modeling methods to research and design distributed systems.</p>
Awarding degree	Bachelor of Engineering and Technology in Educational Programs 6B06124- Software Engineering
List of qualifications and positions	<p>Graduates can work as:</p> <ul style="list-style-type: none"> <li>- engineers - designers in design bureaus, design organizations, departments of automation and informatization of enterprises for the development and maintenance of information and computer systems;</li> <li>- engineers - programmers at industrial enterprises, at enterprises and organizations of all spheres of activity, in governing bodies, departments of information technology, financial organizations, business structures;</li> <li>- engineers - systems engineers at enterprises that implement and use computer technology and programming;</li> <li>- Web - developers, researchers in design and research organizations.</li> </ul>
Professional area	<p>The objects of professional activity of a graduate are: public and private enterprises and organizations that develop, implement and use computer technology and software in various fields, namely: mechanical engineering, metallurgy, transport, telecommunications, science and education, healthcare, agriculture, services, administration, economics, business, management of various technologies, that is, in almost all spheres of human activity.</p>