

**TURAN-ASTANA UNIVERSITY**

**APPROVING IT**

First Vice-Rector

\_\_\_\_\_ Daubaev K. Zh.  
\_\_\_\_\_ 2022

**EDUCATIONAL PROGRAM DEVELOPMENT PLAN**

6B06102 Computer equipment and software  
for the period 2022-2026

**ASTANA, 2022**

## 1. Information about the educational program

The Department of Information Technologies trains specialists in the specialty 6B06102 Computer Engineering and software in the state and Russian languages (bachelor's degree). Training has been carried out since 2004.

**The mission of the educational program** 6B06102 Computer Engineering and Software **is** to train competitive specialists who possess moral and ethical values, skills and knowledge in the development and implementation of software, administration and operation of the IT infrastructure of computing systems for the national and international labor market.

The standard development period for full-time education is 4 years.

**The model of the graduate** of this educational program is based on the idea of implementing the goals of education formulated by the Council of Europe, as well as on the concept of professional competence of a specialist developed by modern Kazakh and foreign pedagogical thought.

Schematically, the graduate model is shown in Appendix 1.

**The purpose of the educational program** is to develop professional competencies in the training of qualified specialists in the field of information technology, capable of creating and applying software products, hardware software of computer systems and networks in solving professional problems.

### **Objectives of the educational program:**

- planning and regular adjustment of the content of the educational program, taking into account the Mission, Vision and Strategic Goals of the Turan-Astana University Strategic Development Program for 2020-2025, the social and professional order of society and stakeholders.

- improving the educational process, updating the content of education based on strengthening the fundamental nature of training, synthesizing the educational process and scientific research, matching the topics of scientific research and projects to the disciplines taught, and using research results in educational programs;

- updating the content of educational and methodological materials of disciplines to ensure knowledge in the IT field, software development skills and increase the attractiveness of the OP "Computer Engineering and Software";

- development and implementation of innovative approaches to learning; strengthening the role of independent work of students and improving the control of students' knowledge at all stages of training based on information and computer technologies; ensuring students' participation in activities in the development of educational programs;

### **Professional competence of a specialist**

a) graduate of the specialty 6B06102 Computer engineering and Software:

- has social and personal qualities: purposefulness, sociability, organization, responsibility, hard work

- applies knowledge of the basics of economics, law and life safety in the field of professional activity

- applies basic knowledge in natural and engineering sciences, facts, phenomena, theories and complex dependencies in the professional field

- demonstrates knowledge of the basics of electronics, circuit design, when programming electronic circuits and devices

- proficient in computer systems and network administration, client-server applications, and troubleshooting technologies

- has the ability to develop system software for solving engineering and technical problems using innovative technologies

### **Special knowledge and skills:**

c) a graduate of the specialty 6B06102 Computer engineering and Software knows:

- modern programming languages in various subject areas

- software development tools, databases and artificial intelligence systems

**Personal competence** is a set of personally significant qualities that determine readiness for professional activity: a free, humane, spiritual, harmonious, practical, physically healthy, creative, competitive personality. The personal qualities of a specialist combine:

1. Subject position:
  - motivational-personal, relational, regulatory-activity components:
  - interest in learning.
  - positive, stable motivation for continuing education and self-education, the ability to re-evaluate the accumulated experience and analyze their capabilities in the context of the development of science and changing social practice;
  - ability to acquire new knowledge using modern information and educational technologies;
  - ability to be critical of information and advertising disseminated through mass media channels;
  - understanding the essence and social significance of their future profession, the main problems of the disciplines that determine a specific area of their activity;
  - motivation for positive behavior in society;
  - purposefulness, concentration, perseverance, self-demand, self-criticism, organization, perseverance, will, ability to achieve the intended goal, efficiency, responsibility, ability to take business risks.
2. Spiritual and moral qualities:
  - developed sense of consciousness and self-awareness (intellectual level of development of the individual, society);
  - a sense of mercy, compassion, understanding, empathy;
  - conscience( morality), responsiveness, sincerity, kindness, justice;
  - a conscious and empathetic attitude towards a person as the highest value, charity, decency, respect for elders, awareness of the value of the family;
  - a holistic worldview and humanistically oriented activities.
3. Civic qualities:
  - internal freedom and respect for state power, love for the Motherland;
  - self-esteem, discipline, patriotic feelings;
  - the ability to take responsibility and participate in the functioning and development of democratic institutions of society.
4. Labor qualities:
  - positive attitude to work, the need for creative work, hard work, duty and responsibility;
  - entrepreneurial spirit, efficiency, economic and environmental culture.
5. Aesthetic qualities:
  - the desire and ability to introduce elements of beauty in all aspects of life, the willingness to manifest themselves in art as much as possible;
6. Physical qualities:
  - ability to versatile motor activity (energy, strength, endurance, agility, speed);
  - readiness for physical self-improvement, healthy lifestyle.

## 2. Competence map of EP 6B06102 Computer engineering and software:

<b>Professional competencies</b>	<b>Learning outcomes</b>
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<ul style="list-style-type: none"> <li>- The ability of a person to develop socially-, culturally and physically based on the principles of-multiculturalism, multilingualism and environmental thinking</li> </ul>	<ul style="list-style-type: none"> <li>- To demonstrate personal competitiveness, citizenship, physical and environmental culture, critical thinking skills</li> <li>- To carry out interpersonal, intercultural and professional communications using grammatical knowledge and speech tools in oral and written forms at the state level Russian and foreign languages</li> </ul>
<b>Basic competencies</b>	<b>Learning outcomes</b>
<ul style="list-style-type: none"> <li>- Readiness to apply digital technologies for the development of production, business, science, social sphere</li> </ul>	<ul style="list-style-type: none"> <li>- Use various types of ICT: Internet resources, cloud and mobile services for searching, storing, processing, protecting information resources, based on mathematical methods and algorithms for solving problems of a theoretical and applied nature.</li> </ul>
<b>General education competencies</b>	<b>Results of training</b>
<p>In the field of native and foreign languages:</p>	<ul style="list-style-type: none"> <li>- Knows phonetic, spelling, lexical, grammatical norms of the language being studied; orientations in solving specific communicative tasks in the most common standard communication situations.</li> <li>- Understands simple information on personal and social topics, is able to conduct a ritual dialogue, make a short message in line with the main areas and topics of communication, perceive by ear and understand short authentic texts of an informative, descriptive and pragmatic nature, fill out a questionnaire, write letters.</li> <li>- He is proficient in introductory, search, studying and viewing reading of authentic texts of various genres, listening, transmitting information in the form of a short abstract based on the text.</li> </ul>
<ul style="list-style-type: none"> <li>- Ability to build algorithms and programs, master new programming languages, upgrade existing information systems and technologies during the life cycle; ability to solve problems using procedures, hardware and software., testing and debugging hardware and software complexes and systems</li> </ul>	<ul style="list-style-type: none"> <li>- Has basic methodological programming skills, the basics of syntax and semantics of the programming language. Can program in high-level algorithmic languages C++, C#, Java, SQL, PHP, etc. to solve practical problems.</li> <li>- Can apply various approaches in Web programming for the development of Internet projects, databases and websites, and various software applications on the Web - focused environment, software testing.</li> </ul>
<ul style="list-style-type: none"> <li>- Ability to analyze and interpret information</li> </ul>	<ul style="list-style-type: none"> <li>- , test and debug software complexes of in-</li> </ul>

<p>about various business processes, analyze reports of enterprises of various forms of ownership, organizations, departments and use the information obtained for making managerial decisions</p>	<p>formation systems, and carry out project certification according to quality standards.</p> <ul style="list-style-type: none"> <li>- Analyzes the execution of business processes, develops modeling algorithms for various platforms, forms databases for making managerial decisions of management objects.</li> </ul>
<ul style="list-style-type: none"> <li>- Proficiency in basic methods of designing the architecture of components of hardware and software complexes, mastering the skills of designing and integrating hardware and software, layout of computer systems, complexes and networks</li> </ul>	<ul style="list-style-type: none"> <li>- Designs various data models.</li> <li>- Develops software applications for management based on modern design methods, tools and technologies, is able to apply practical skills in choosing the architecture and integration of information systems hardware, working with hardware and software-hardware complexes of information systems in various fields of application.</li> <li>- Implements skills in developing and storing data in high-tech systems, ensuring network security of stored data.</li> </ul>
<ul style="list-style-type: none"> <li>- Ability to understand the essence of economic relations for the functioning of a successful business in the professional field.</li> </ul>	<ul style="list-style-type: none"> <li>- Demonstrate the ability to formulate a bank of entrepreneurial ideas, draw up a business plan, create an entrepreneurial structure and organize its activities.</li> <li>- Demonstrate knowledge of risk classification, identify, analyze and manage risks in the implementation of projects and the functioning of the organization's business processes</li> </ul>

### 3. Main directions of the educational program development

#### Main directions of development of the educational program 6B06102 Computer engineering and software

Improvement of the educational program based on the competence approach.

1. Introduction of modern educational technologies and methods in the educational process.
2. Training of competitive personnel for the provision of translation services.
3. Effective use of human and scientific potential.
4. Creating a broader alternative to elective component disciplines for the formation of an individual trajectory.

#### Ways of development of the educational program 6B06102 Computer engineering and software

No.	Tasks	Main ways	and deadlines
1	Preparation of bachelors in accordance with the requirements of the modern labor market on the basis of an activity-competence approach.	<ol style="list-style-type: none"> <li>1. Discussion of subjects included in the elective component with employers.</li> <li>2. Introduction of new disciplines to the elective component of the EP.</li> <li>3. Survey of employers satisfaction with employees and graduates of the EP.</li> <li>4. Survey of graduates for satisfaction with the competencies obtained during the implementation of the EP</li> </ol>	<p>December-January 2024-2025 December-January 2023-2024 December-January 2024-2025</p> <p>December - January 2024-2025 December - January 2023-2024 December - January 2024-2025</p> <p>February-April 2024-2025 February-April 2023-2024 February-April 2024-2025</p> <p>December 2024-2025 December 2023-2024 December 2024-2025</p>
2	Formation of a contingent	Admission of persons to the number of students most prepared for training under the 6B06102 Computer Engineering and Software program, which consciously chose the specialty of this educational program and scored the required number of points on results of entrance exams.	<p>June-August 2024-2025 June-August 2023-2024 June-August 2024-2025</p>
3	Forming cooperation with strategic partners and other stakeholders	<ol style="list-style-type: none"> <li>1. Expanding the participation of corporate partners in quality management and shaping the content of the EP (providing databases of practices, participating in the work of the Board of Trustees, etc.).</li> <li>2. Forming a partnership based on a contract that regulates the functions, rights and obligations of participants.</li> </ol>	<p>September-May 2024-2025 September-May 2023-2024 September-May 2024-2025</p> <p>April-May 2024-2025 April-May 2024-2025 April-May 2023-2024 April-May 2024-2025 April-May 2024-2025</p>

		3. Coordination of joint activities with strategic partners in important and promising areas of EP development.	September-May 2024-2025 September-May 2023-2024 September-May 2024-2025
4	Develop tasks to improve the qualification requirements	1. Expand the general pedagogical and psychological knowledge of teachers.  2. Encouraging teachers to improve their pedagogical skills.  3. Development of skills in applying innovative teaching technologies in professional activities.	June-August 2024-2025 June-August 2023-2024 June-August 2024-2025
5	Improving the professional qualifications of teachers in the field of information technology	1. Creating conditions for mastering new pedagogical ideas, tools, and technologies.	September-January 2024-2025 September-January 2023-2024 September-January 2024-2025
6	Creation of a program for the development of young teachers	1. Create a Young Teacher's School. 2. Develop a work plan for the Young Teacher's School.	September-October 2023-2024
7	Creating conditions for academic mobility of teachers and students.	1. Information system support. 2. Expert support (assessment of the quality of education, assessment of the usefulness of the chosen course within the framework of an individualized educational trajectory). 3. Organizational support (assistance in establishing contacts with other universities).	September-May 2024-2025 September-May 2023-2024 September-May 2024-2025
7	Conducting guest lectures and seminars.	1. Create a guest lecture plan. 2. Invite foreign lecturers to give lectures.	According to a separate plan  September-May 2024-2025 September-May 2023-2024 September-May 2024-2025
9	Development of circles and research projects Organization of a scientific council on problematic scientific issues.	Work in accordance with the Plan of circles  2. Implementation of research results (compilation of thesaurus dictionaries) in the practice of the educational process.	September-May 2024-2025 September-May 2023-2024 September-May 2024-2025 According to a separate plan, September-May 2024-2025 September-May 2023-2024 September-May 2024-2025
10	Increasing the scientific potential of teaching staff EP 6B06102 Computer	1. Increase the share of publications in the journals recommended by CCSON MONRC	In accordance with the individual plan of teaching staff.

	engineering and software	<p>2. Increase the share of publications in foreign journals with a non-zero impact factors</p> <p>3. Participation in competitions for grant funding for scientific and technical projects</p> <p>4. Activation of relations with foreign partners in order to implement joint scientific research and publication of educational and methodical literature</p>	<p>September-May 2024-2025</p> <p>September-May 2023-2024</p> <p>September-May 2024-2025</p> <p>According to a separate plan</p> <p>September-May 2024-2025</p> <p>September-May 2023-2024</p> <p>September-May 2024-2025</p>
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#### 4. EP quality monitoring

<b>№</b>	<b>Name of the event</b>	<b>Dates</b>	<b>Responsible for the implementation</b>
of 1	Monitoring the quality of the educational program:	December 2023-2024 December 2024-2025	Dean, Head of the Department, advisors
1.1	- Internals (student survey)	February-April 2023-2024 February-April 2024-2025	
1.2	- External (survey of employers, assessment of graduates in the employer community)		
2	Examination of UMCD	September-December 2024-2025 September-December 2023-2024 September-December 2024-2025	Head of the Department, UMB Faculty
3	Analysis of the results of border control, examination sessions	In accordance with the academic calendar.	Head of the department, advisors
4	Analysis of the results of the final certification	June 2024-2025 June 2023-2024 June 2024-2025	Head of the Department, teaching staff of the department
5	Conducting open classes	According to the plan conducting open classes.	Head of the Department, rel.by UMR, teaching staff
6	Mutual visits of classes, discussion of results at meetings of the department	According to the schedule of mutual visits and the work plan of the department.	Head of the Department, rel.by UMR, teaching staff