6B01503-MATHEMATICS-COMPUTER SCIENCE

The purpose of the educational program: Training of competitive specialists with theoretical and practical knowledge to identify and solve research problems in the field of mathematics and computer science using modern tools and innovative pedagogical technologies.

1.2. VISION, MISSION, PROGRAM GOAL, VALUES, ATTRIBUTES OF A UNIVERSITY GRADUATE

Vision:

An intelligent platform that develops teachers who can manage in a rapidly changing world.

Mission:

Formation of teachers of leaders who are able to create, develop and disseminate advanced knowledge and values in the field of education for the benefit of the country and the world.

Program goal:

The University aims to become a hub of innovative methods of teaching, learning and research, as well as the development of rural education in Central Asia.

Values:

Integrity, dedication, caring for others.

Attributes of a University graduate:

- Self-taught, able to reflect and explore their practice
- Have moral and ethical qualities and are responsible
- Have deep subject, digital knowledge and a broad intellectual outlook
- Creative and critical thinking, collaborative and communicative
- Practice leadership in teaching and learning, and are adaptable to rapidly changing conditions
- Diverse, inclusive and for equal opportunities in society

1.3. JUSTIFICATION OF THE EDUCATIONAL PROGRAM

Relevance of the educational program. It is aimed at forming a positive attitude towards the teaching profession among future teachers of mathematics and computer science, increasing the authority of the teacher and creating conditions for the development of personal qualities. There will always be jobs for teachers of mathematics and computer science, and the demand for these teachers will only grow as the technical economy develops. But despite the fact that there are always jobs, it is important for teachers to stand out in a competitive and popular market.

Market demand. There is a great demand for teachers of mathematics and computer science in the labor market. Employment is possible in any region and locality of the country where secondary or secondary specialized educational institutions work. The demand for teachers of mathematics and computer science is very high, growing from year to year. For example, https://kz.trud.com on the official website in 2021, you

can see the level of demand for teachers of mathematics and computer science in Kazakhstan.

1.4. FEATURES OF THE EDUCATIONAL PROGRAM

The specifics of the educational program «6B01503-Mathematics-computer Science» - includes the formation of the necessary qualifications and competencies in a new direction for the graduate. The system of inclusive education, trilingualism provided for rapid adaptation, adaptation to the new requirements of employers, to market changes.

Coincidence with similar EP of leading universities of the far and near abroad
Oxford University-52%
Jagiellonian University-44%
University of Mississippi-49%

1.5. POTENTIAL DIRECTION AND JOBS FOR GRADUATES

A graduate of the educational program «6B01503-Mathematics-computer Science» can work as a teacher of mathematics and computer science in educational and scientific institutions, institutions of additional education and training centers.
Bachelors of education under the educational program «6B01503 - Mathematics-computer science» can perform the following types of professional activities:

- in the field of educational activities;
- in the field of experimental research activities;
- in the field of organizational and managerial activities;
- in the field of social and pedagogical activity;
- in the field of educational activities.

1.6 AREAS OF PROFESSIONAL COMPETENCE

Areas of professional competence 1: In the field of educational activity: distributes educational information, teaches self-study; masters the basics of pedagogical skills, forming professional qualifications in the field of mathematical and information disciplines.
Areas of professional competence 2: In the field of experimental research: studies and summarizes advanced pedagogical experience in the field of mathematics and computer science; conducts a pedagogical experiment, introduces its results into the educational process; studies new scientific results, scientific literature or research projects in accordance with the profile of the object of professional activity; participates in scientific seminars, scientific and thematic conferences, symposiums; uses mathematical methods and high-tech technologies for research and modeling of complex systems, in particular data processing and analysis; development of technical specifications for the development of software products.
Areas of professional competence 3: In the field of organizational and managerial activity: plans the content of education in mathematics and computer science at different levels; organizes the learning process and determines the methods of implementation.
Areas of professional competence 4: In the field of socio-pedagogical activity: forms a multicultural personality; creates favorable conditions for the life, upbringing and development of students and provides pedagogical support.

Areas of professional competence 5: In the field of educational activity: introduces students to the system of social values; implements educational work in accordance with the laws, laws, principles, educational mechanisms of the pedagogical process; plans extracurricular educational work, solves specific educational tasks, selects and applies various forms and methods of teaching and upbringing in extracurricular work in mathematics and computer science; keeps in touch with the team of students, teachers teaching in this class, parents.

1.7. LEARNING OUTCOMES OF THE EDUCATIONAL PROGRAM

LO 1 – Applies a variety of communication formats taking into account socio-cultural diversity, adheres to the principles of equality and accessibility in education, to create a prosperous and inclusive environment, has leadership qualities and is able to apply them to develop collective potential.
LO 2 – Possess high-level critical and creative thinking skills, are capable of self-regulation and reflection to solve professional problems.
LO 3 – Demonstrate knowledge of and adherence to ethical and legal norms in research and use of digital technologies. Apply security measures when working with digital information and data protection, promote the active, safe and ethical use of digital resources.
LO 4 – The student develops short-term lesson plans for mathematics and computer science, taking into account the principles of integration using modern educational and information technologies and uses various forms of criteria assessment.
LO 5 – Students, using fundamental knowledge in the field of mathematics and geometry, prove mathematical conclusions and solve mathematical problems, analyzing problems of increased complexity in various branches of mathematics, methods of solving Olympiad problems, choose the most effective.
LO 6 – Students develop skills in using ready-made computer programs, programming languages for solving mathematical and applied problems, forming hypotheses, building mathematical models, calculations and graphics.
LO 7 – Students use basic programming technologies, can solve problems using various methods of algorithm development and choosing the most appropriate algorithms and means of their implementation related to the formulation of tasks, possess methods and tools for program development.
LO 8 – Students develop a model of mathematical education, evaluate the principles, methods and technologies of teaching mathematics and computer science. Knows the methodology of solving various problems, implements intra-subject and interdisciplinary connections in academic work, is able to make logical judgments, is able to consistently substantiate and correctly present mathematical knowledge orally and in writing in a multilingual environment.
LO 9 – Students have a general understanding of the methods of designing mechanical structures of robots, the principles of programming robotic systems and special languages.

Matrix for comparing the results of training on the EP with the attributes of the graduate

	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9
AG 1		+	+	+	+	+	+	+	+
AG 2	+	+							
AG 3	+		+	+	+	+	+	+	+
AG 4	+	+	+		+		+	+	+
AG 5	+	+		+	+	+	+	+	+
AG 6		+	+	+	+	+	+	+	+

1.8. REGULATORY REFERENCES

The program is developed on the basis of the following regulatory legal acts:

1) Order of the Minister of Science and Higher Education of the Republic of Kazakhstan dated july 20, 2022, №2 on approval of the state mandatory standards of «Higher and postgraduate education».

2) Order of the Acting Minister of Education and Science of the Republic of Kazakhstan dated december 15, 2022, №500 on the approval of the professional standard «Teacher».

3) Order №125 of 27.03.2023 on approval of methodological recommendations on the organization and conduct of pedagogical practice for students of the educational field «Pedagogical Sciences».