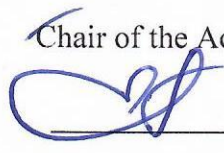


Ministry of Science and Higher Education of the Republic of Kazakhstan
Korkyt Ata Kyzylorda University Non profit Joint Stock Company

APPROVED BY
Chair of the Academic Quality Committee

N A Akhatayev
29 08 2025



**Graduate Model for the «7M01510 – Mathematics» Educational
Programme**

Kyzylorda, 2025

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CONTENTS

- Introduction
- 1 Description of the Educational Programme
- 2 Components of the Graduate Model
 - 2.1 Aims of the Educational Programme
 - 2.2 Professional Profile of the Graduate
- 3 General and Subject Specific Competences
- 4 Main Areas of Professional Activity
- 5 Professional Functions of the Graduate
- 6 Objects of Professional Activity
- 7 Graduate Attributes
- 8 Expected Outcome

INTRODUCTION

The graduate competence model is developed in accordance with the principal directions of the Bologna Process. It is intended to define the professional tasks that a specialist of a particular qualification level and profile must be able to perform. Developing a contemporary university graduate model that responds to the needs of stakeholders and all interested parties is one of the key strategic objectives of Korkyt Ata Kyzylorda University. Its implementation is supported by the required human, educational and methodological, information, and material and technical resources. To ensure high quality preparation of graduates who are in demand in the labour market, the University pursues a targeted human resources policy and systematically improves its material and technical facilities.

1 Description of the Educational Programme

The 7M01510 Mathematics educational programme, delivered by the Physics and Mathematics Educational Programme of the Institute of Natural Sciences at Korkyt Ata Kyzylorda University Non profit Joint Stock Company, has been developed with due regard to labour market needs and the requirements of regulatory documents issued by the Ministry of Science and Higher Education of the Republic of Kazakhstan. It constitutes a system of documents designed to organise the educational process.

2 Components of the Graduate Model

The principal components of the graduate model include the aims and objectives of the educational programme, the objects, types, and areas of professional activity, and the specialist competence model in Appendix 1, including descriptors, types of competences aligned with the educational programme, and learning outcomes.

2.1 Aims of the Educational Programme

To prepare highly qualified, competitive, and sought after academic and teaching professionals in education and the mathematical sciences who possess a high level of general and professional culture, are capable of self development, and can adapt socially amid innovative changes in the political, socioeconomic, and technological development of society.

The graduate model for the 7M01510 Mathematics educational programme is designed to prepare a highly qualified professional with advanced contemporary mathematical knowledge who is able to conduct research in education, apply innovative methods of teaching mathematics, design and manage the educational process, and demonstrate a high level of professional and social responsibility. Graduates develop the ability to apply current research achievements in mathematics education, digital technologies, and pedagogical innovations effectively in their professional practice. They uphold the principles of academic integrity, adapt to changing labour market requirements, and pursue continuous professional development.

2.2 Professional Profile of the Graduate

A graduate of the 7M01510 Mathematics educational programme:

- possesses advanced theoretical knowledge in the principal areas of pure and applied mathematics;
- analyses mathematical and pedagogical problems scientifically and makes evidence based decisions;

- is able to teach mathematical disciplines in secondary, technical and vocational, higher, and postgraduate education institutions;
- applies contemporary mathematics teaching methods and digital educational technologies;
- plans and conducts research and research informed teaching;
- takes account of learners' individual characteristics and educational needs;
- is guided by academic integrity, professional teaching ethics, and social responsibility;
- is able to communicate professionally and academically in Kazakh, Russian, and a foreign language;
- is committed to continuously improving professional knowledge, engaging in self reflection, and pursuing lifelong learning.

3 Core Graduate Qualities

3.1 General Professional Competences

The graduate:

- analyses natural and social processes systematically on the basis of a scientific worldview;
- applies critical, analytical, and creative thinking skills when solving professional problems;
- uses methods for searching, selecting, analysing, systematising, and interpreting information;
- makes effective use of digital technologies and information resources in professional and research activities;
- works effectively in teams, develops professional collaboration, and makes managerial decisions;
- communicates orally and in writing in academic and professional settings;
- assumes responsibility for professional outcomes and complies with the standards of academic integrity.

3.2 Subject Specific Competences

The graduate:

- possesses advanced knowledge of algebra, geometry, mathematical analysis, differential equations, probability theory, mathematical statistics, and other areas of mathematics;
- analyses mathematical concepts, propositions, theorems, and proof methods at an academic level;
- selects effective methods for solving theoretical and applied problems;
- develops and investigates mathematical models of real processes and phenomena;
- interprets and substantiates the results of mathematical calculations and evaluates their validity;
- applies mathematical methods to interdisciplinary problems.

3.3 Pedagogical and Methodological Competences

The graduate:

- possesses knowledge of contemporary theories and methods of mathematics teaching;
- designs educational programmes, courses, lessons, and teaching and learning materials;
- applies active, inquiry based, problem based, and differentiated teaching methods;

- creates a learning environment that develops learners' mathematical, functional, and digital literacy;
- develops tools for assessing learning achievement and analyses assessment results;
- implements the principles of inclusive education with due regard to learners with special educational needs;
- provides feedback and undertakes pedagogical reflection and monitoring within the educational process;
- provides academic and methodological supervision of learners' research and project activities.

3.4 Research Competences

The graduate:

- identifies current research problems in mathematics and mathematics education;
- formulates the aim, objectives, object, subject, and hypothesis of a study;
- selects and applies theoretical and empirical research methods with appropriate justification;
- collects, processes, analyses, and interprets research data;
- evaluates the reliability and practical significance of research findings;
- prepares research articles, conference papers, projects, and a master's thesis;
- presents research findings in academic settings and participates in scholarly discussion;
- observes academic integrity, research ethics, and intellectual property requirements throughout the research process.

3.5 Digital Competences

The graduate:

- uses contemporary software for mathematical and statistical computation;
- uses digital learning platforms, virtual learning environments, and electronic resources;
- uses tools for modelling and visualising mathematical objects and processes;
- develops digital learning content and electronic teaching and learning materials;
- uses artificial intelligence tools purposefully, responsibly, and ethically to address pedagogical and research tasks;
- complies with information security, personal data protection, and digital ethics requirements.

3.6 Social and Personal Competences

The graduate:

- respects universal human values;
- demonstrates civic responsibility and professional ethics;
- respects learners' rights, dignity, and individual characteristics;
- follows the principles of intercultural communication and tolerance;
- critically evaluates their own professional practice and defines a personal development pathway;
- adapts to changing social and professional conditions;
- demonstrates leadership and works effectively in a team.

4 Main Areas of Professional Activity

Graduates may undertake the following types of professional activity:

1. Teaching — teaching mathematical disciplines in educational institutions and organising learners' cognitive, educational, and research activities.
2. Research — conducting research in mathematics and mathematics teaching methodology and participating in research projects.
3. Curriculum and methodology development — developing and reviewing educational programmes, curricula, subject content, textbooks, and methodological materials.
4. Organisation and management — planning, coordinating, and monitoring the educational process and evaluating its quality.
5. Expert and analytical work — conducting academic and methodological review of educational programmes, teaching and learning materials, and pedagogical technologies.
6. Project and innovation work — developing and implementing innovative and digital projects in mathematics education.

5 Professional Functions of the Graduate

The graduate is prepared to perform the following professional functions:

- plan and organise teaching and research processes;
- teach mathematical disciplines and assess learning outcomes;
- design and update educational content;
- implement contemporary pedagogical and digital technologies;
- supervise learners' research activities;
- develop research and teaching materials;
- monitor the quality of education;
- organise research projects and professional events;
- collaborate with professional communities and educational institutions;
- examine, synthesise, and disseminate effective teaching practice.

6 Objects of Professional Activity

The objects of graduates' professional activity include:

- general secondary education institutions;
- technical and vocational and post secondary education institutions;
- higher and postgraduate education institutions;
- research institutes and centres;
- teacher professional development organisations;
- education authorities;
- education quality assessment and review organisations;
- supplementary education centres;
- organisations that develop digital educational resources.

7 Graduate Attributes

Graduates of the 7M01510 Mathematics educational programme possess the following principal attributes:

- advanced mathematical knowledge;
- a research culture;
- teaching expertise;
- critical and systems thinking;
- digital literacy;
- openness to innovation;
- academic integrity;
- professional responsibility;
- communication skills;
- leadership and teamwork;
- an inclusive culture;
- commitment to lifelong learning.

8 Expected Outcome

A graduate who has successfully completed the 7M01510 Mathematics educational programme is a competitive professional with advanced mathematical and pedagogical knowledge who is able to conduct research, teach mathematics using contemporary methods, apply digital technologies effectively, and address innovative challenges in education.

In professional practice, the graduate is guided by the principles of academic integrity, teaching ethics, social responsibility, and continuous improvement in educational quality. The graduate is prepared to adapt to changes in national and international education, develop professional competences systematically, and contribute to the advancement of mathematics education.