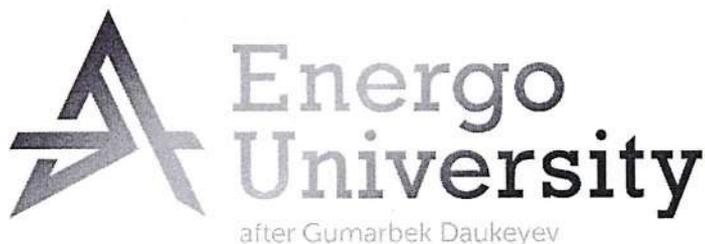


MINISTRY OF SCIENCE AND HIGHER EDUCATION OF THE REPUBLIC OF
KAZAKHSTAN
NON-PROFIT JOINT STOCK COMPANY
"ALMATY UNIVERSITY OF ENERGY AND COMMUNICATIONS NAMED AFTER
GUMARBEB DAUKEEV"
INSTITUTE OF COMMUNICATIONS AND SPACE ENGINEERING



"Agreed"

Director of the «FAI»



"I approve"

Rector of AUPET



MODULAR EDUCATIONAL PROGRAM
7M07107 SPACE ENGINEERING AND TECHNOLOGY
(MASTER'S DEGREE IN SCIENTIFIC AND PEDAGOGICAL DIRECTION)
POSTGRADUATE EDUCATION

Direction of training (according to the classifier from 13.10.2020): 7M071 Engineering and Engineering Group of educational programs: M107 Space Engineering

The training period is 2 years

Degree awarded: Master of Technical Sciences

Qualification level in accordance with the National Qualifications Framework: Level 7.

Almaty 2025

The modular educational program was developed at the Department of Space Engineering.
Head of the educational program Uteliyeva N.

Director of ICSE Omarbekova A., Dr. PhD., Tolendiuly S., Dr. PhD, Head of Department.

The OP was considered and approved at a meeting of the Department of Space Engineering dated 28.03 2025, Protocol No. 8

Head of the Department of SE  S. Tolendiuly

The EP was considered and approved at a meeting of the educational and methodological commission of the Institute of Communications and Space Engineering (protocol No. 8 of 29.04 2025).

Director of ITSE  A. Omarbekova

The EP was considered and approved at the AUES Academic Council (Protocol No. 11 of 23.05, 2025).

List of Abbreviations and Acronyms

VO – Higher Education
GSES – State Compulsory Educational Standard
EQF – European Qualifications Framework
NCO – National Classification of Occupations
RK – Republic of Kazakhstan
NQF – National Qualifications Framework
NQS – National Qualifications System
GEM – General Education Module
EP – Educational Program
GED – General Education Disciplines
RC – Required Component
UC – University (Institutional) Component
BD – Basic Disciplines
MD – Major (Profile) Disciplines
IET – Individual Educational Trajectory
SQF – Sectoral Qualifications Framework
PS – Professional Standard
PGE – Postgraduate Education
ON – Competencies
LO – Learning Outcome
CW – Course Paper
CGA – Calculation and Graphic Assignment
SRW – Students' Research Work
CED – Catalog of Elective Disciplines

1. Passport of educational program

№	Field name	Note
1	Registration number	7M07100101
2	Education Area Code and Classification	7M07 Engineering, Manufacturing and Construction Industries
3	Code and classification of training areas	7M071 Engineering and Engineering
4	Educational Program Group	M107 Space engineering
5	Name of the educational program	7M07107 Space engineering and Technology
6	Type of Generation Program	a) Current Educational Program;
7	Purpose of the Educational Program	Training of highly qualified personnel in the field of space engineering and who have theoretical and practical knowledge, skills and skills in the study of processes and spacecraft of space systems, design and implementation of technical projects, systematic solution of problems using innovative approaches, construction of concepts and strategies of activities that meet the needs of domestic and world markets of intellectual labor, ready to make a qualitative breakthrough in the development of astronomy, cosmophysics and cosmonautics.
8	National Qualifications Framework Level	7
9	Level by Industry Qualification Frame	7
10	Distinctive features of the Educational Program	a) no
	Partner Institution of Higher Education	
11	List of competencies	The training results and the correlation of educational program training results with the competencies to be formed are presented in Appendices 1 and 3
12	Training results	<p>LR-1 (LR -01). Demonstrate the ability to improve and develop their intellectual and general cultural level, independently acquire and use new knowledge and skills in practice, freely use a foreign language as a means of business communication;</p> <p>LR-2 (LR -02). Demonstrate the ability to actively social mobility, to self-study new research methods, to change the scientific or industrial profile of their professional activities in the process of changing socio-cultural and social conditions of activity;</p> <p>LR-3 (LR -03). Demonstrate skills and abilities in the organization of research work, in team management, in assessing the quality of performance results, take the initiative, resolve problematic situations;</p> <p>LR-4 (LR-04). Analyze scientific and technical information, set research objectives, conduct experiments and tests of space technology objects, design and present the results of scientific research, conduct bibliographic work, analyze, synthesize and critically summarize information;</p>

		<p>LR-5 (LR -05). Demonstrate the ability to use in-depth theoretical and practical knowledge, generate and use new ideas, find creative solutions to professional problems, apply modern research methods, conduct technical tests and (or) scientific experiments;</p> <p>LR-6 (LR -06). To develop technical solutions related to the modernization of elements and subsystems of spacecraft, measures to improve operational characteristics, save resources, increase reliability, industrial and environmental safety of space equipment and systems;</p> <p>LR-7 (LR -07). Demonstrate readiness to participate in the development of spacecraft elements and systems projects using modern achievements of science, practice and best practices, modern design automation tools;</p> <p>LR-8 (LR -08). To carry out technical calculations on projects, to carry out technical and economic analysis of the effectiveness of design solutions, to develop and apply application software for calculating parameters and selecting equipment, to determine indicators of the technical level of the projected objects or technological schemes.</p> <p>LR-9 (LR -09). To make descriptions of the principles of operation and device of nodes and elements of the studied (developed) object of space technology.</p>
13	Form of education	Full - time
14	Language of instruction	Russian, Kazakh
15	Volume of loans	120
16	Academic degree awarded	Master of Technical Sciences
17	Availability of an appendix to the license for the direction of training	KZ80LAA00018161 dated 05 May 2020
18	Availability of accreditation Educational Program	there is
	Name of the accreditation body	IAAR
	Validity period of accreditation	05.04.2024-04.04.2029
19	Information about disciplines	Information about the disciplines of the UC/OK ED, PD are presented in Appendix 1
20	Field of professional activity	The field of experimental, theoretical and applied astronomy and cosmophysics, as well as the fields of related natural and technical sciences; - the field of education, including the field of pedagogy, theory and methods of teaching physics and astronomy in secondary schools
21	Types of professional activity	Movement, physical structure; development of celestial bodies of natural and artificial origin, as well as systems of these bodies up to the Universe as a whole; matter filling outer space in any of its states; aerospace technology; products, materials, instruments, mechanisms and equipment used in astronomy, cosmophysics and cosmonautics.
22	Modular curriculum	Given in Appendix 2

2. Matrix of Alignment between Learning Outcomes of the Educational Program as a Whole and the Competencies Being Developed

№	Titles of Disciplines	ON1	ON2	ON3	ON4	ON5	ON6	ON7	ON8	ON9	ON10
1	History and Philosophy of Science	v			v						
2	Foreign Language (Professional)	v		v							
3	Management Psychology	v	v								
4	Higher Education Pedagogy	v									v
5	Scientific and Technical Problems of Space Activities			v	v						
6	Teaching Practice			v	v						
7	Research Practice		v	v							
8	Research Practice		v	v							
9	Theory and Practice of Project Management / Organization and Management of Public Procurement	v	v					v	v		
10	Master's Research Work									v	v
11	Master's Research Work									v	v
12	Master's Research Work									v	v
13	Master's Research Work									v	v
14	Organization and Planning of Scientific Research / Space Mission Planning					v	v		v		

15	Fundamentals of Automatic Control Theory / Fundamentals of Space Systems Design	v				v		v	v		
16	Principles of Satellite Communication / Spacecraft Design						v		v	v	
17	Robot Design / Modern Satellite Navigation Technologies					v	v		v		
18	Systems Theory and System Analysis / Onboard Systems of a Spacecraft						v		v		
№		ON1	ON2	ON3	ON4	ON5	ON6	ON7	ON8	ON9	ON10
19	The target equipment of the spacecraft / Modern Gyroscopic Systems		v	v		v					
20	Embedded Systems – Microcontrollers / Computer Vision	v					v			v	
21	Robot Algorithms Development and Programming / Electronic Design and Assembly of Space Systems	v					v			v	
22	Principles and Applications of Remote Sensing of the Earth / Design of Thermo-Mechanical Systems for Micro- and Nano-Class Satellites	v					v			v	
23	Space Activity Management: Space Project Management / Space Materials Science							v	v		