«APPROVED»
Director of ITSE
_____K.A.Alipbayev
«_17_» __04_. 2023 y.

DEVELOPMENT PLAN FOR THE EDUCATIONAL PROGRAM

6B07116 – Electronic engineering technologies

FOR THE 2023-2027 SCHOOL YEAR

Level of the main educational program

(Bachelor's degree 6 level)

Institute of Telecommunications and Space Engineering (ITSE)

2023

Content

Passport of the Modular Educational Program Development Plan (MEP)

6B07116 – Electronic Engineering Technologies

Purpose of the EP	*Educational program objectives in the field of training:* "Electronic Engineering Technology" is an educational program aimed at training specialists in the field of electronics and engineering systems. It includes the study of electronic circuits, microcontrollers, digital and analog devices, automation, as well as the basics of programming and designing electronic devices. Graduates acquire the skills of developing, configuring, and maintaining modern electronic equipment and systems. The purpose of the OP is to train qualified specialists in the field of electronic engineering who are able to independently develop electronic devices, identify and acquire the necessary knowledge and skills in this field in order to improve their professional performance, increase the efficiency of their work, and overall improve the country's economy.
Grounds for developing the MEP development plan (hereinafter referred to as the "Plan")	The educational program is developed in full compliance with the regulatory legal acts defining the national priorities in the field of education of the Republic of Kazakhstan, as well as the university's mission. The development of the educational program 6B07116 – Electronic engineering technologies involves the use of all necessary resources (information, material and technical base, financial, staffing, etc.) for the formation of the graduate's competencies, as well as the provision of educational, scientific, methodological, educational work with students.
The main developers of the Plan	Head of the educational program of NAUES named after Gumarbek Daukeev Yusupova S.A.- C.T.S., Assistant Professor of the Department of EE academic staff: Orazalieva S.K. - Head of the Department, PhD, Associate Professor; Orynbay A.A. – PhD, Assistant Professor of the Department of EE; Nurghizat E.S. - PhD, Assistant Professor of the Department of EE; Zhetenbaev N.T. - PhD, Assistant Professor of the Department of EE; Ayazbay A.E. - Senior Lecturer of the Department of EE *Employers:* *Zikirbay Q. – Head of IT Department of Saiman Corporation;* *Students:* *Bazarhanov A– 3rd year student;* *Esdaulov E. – 3rd year student,.* *Khalilov T.I.– 2nd year student*
The purpose of the Plan	Ensure effective management of the MEP
The mechanism of plan formation	The MEP and the Development Plan have been drawn up with the involvement of developers and employers
Mechanisms for disseminating information about the Plan and the goals of the MEP	All information about the educational program, including information about the teaching staff, students, university resources, partners, admission rules, library, etc., is available on the AUES University's online portal https://aues.edu.kz. The university's official website provides access to the educational and administrative information necessary for students through links to the Platonus automated learning management system. The educational program is subject to mandatory discussion at the university's department meetings and academic council meetings.
Terms of the Plan implementation	From 1.09.2023 to 1.09.2027 (4 years)

Environmental analysis

This modular educational program (MEP) of higher education (bachelor's degree) in the field of study 6B07116 - Electronic Engineering Technologies has been developed in accordance with the Regulatory Documents of the Ministry of Education and Science of the Republic of Kazakhstan (MES RK), the main of which are:

1. Constitution of the Republic of Kazakhstan dated August 30, 1995.
2. Law of the Republic of Kazakhstan "On Education" dated July 27, 2007, No. 319-III.
3. Order of the Ministry of Education and Science of the Republic of Kazakhstan No. 604 dated October 31, 2018, "On Approval of State Compulsory Standards of Education for All Levels of Education".
4. Order of the Minister of Education and Science of the Republic of Kazakhstan dated April 20, 2011, No. 152 "On Approval of the Rules for Organizing the Educational Process Using Credit-Based Learning Technologies."
5. Order of the Minister of Education and Science of the Republic of Kazakhstan dated October 31, 2018, No. 600 "On Approval of the Standard Rules for Admission to Educational Institutions Implementing Higher and Postgraduate Education Programs."

When developing this MOP, the internal regulatory documents of the university and the documents of the OP 6B07116 – Electronic Engineering Technologies (Bachelor's Degree) program, which has already been implemented at the university, were taken into account, along with the educational regulations of the Ministry of Education and Science of the Republic of Kazakhstan. These documents include curricula, catalogs of elective disciplines, recommendations, and feedback from faculty members and stakeholders.

The next step for the MEP developers was to conduct a survey of the current state of the manufacturing industry to identify areas for improvement and modifications in the existing program. As engineering and human-machine systems develop and become more complex, a growing emphasis is placed on system-wide issues, which form the core of scientific (mainly mathematical) systems engineering. The responsibility for the system as a whole and the related interdisciplinary approach to other engineering disciplines distinguish systems engineering from all other engineering specialties.

In this regard, it is necessary to train highly qualified personnel for innovative and science-intensive sectors of the energy and telecommunications industries.

Analysis of the internal environment

The implementation of the educational program 6V07116 – Electronic Engineering Technologies is actively supported by the faculty of the Department of Electronic Engineering, NAUES.

The faculty meets all the required qualifications.

The department's degree-holding rate is 55%, which has been steadily increasing. The department's staff annually participates in advanced training courses at leading scientific centers in the Republic of Kazakhstan, the Russian Federation, Kyrgyzstan, the Republic of Belarus, and foreign countries (Germany, the People's Republic of China, Poland, and Latvia).

Research work in the specialty is carried out annually through the participation of teaching staff and students in international and national scientific and practical conferences, interuniversity methodological conferences, etc.

The available auditorium fund meets the needs of the educational process and allows for two-shift training.

The analysis of student and teaching staff satisfaction is presented below in the form of a SWOT analysis for students and a SWOT analysis for teaching staff (for the period from 2021 to 2023).

SWOT analysis

S (strength)	***W (weakness)***
- a good material and technical base of the university and departments that serve the OP. - a policy of forming a contingent - supporting students, - monitoring the results of training - training according to the state educational order; - the presence of a computer system for internal monitoring of the quality of students' knowledge; - high achievements of students	- - the factor of reducing the number of applicants due to the weak preparation of applicants in technical disciplines and the increase in the university's passing score;- increase in the average age of the teaching staff;- insufficient level of realization of potential in research work (participation in competitions, tenders, funded projects).
O (opportunity)	***T (threat)***
- creating conditions for students to write and publish scientific articles and reports at international conferences; -opportunity to improve the qualifications of teaching staff	- decrease in the number of students

Action plan for the development of the Educational Program

Areas of activity	Events	Responsible persons	Implementation mechanism
1	2	3	4
1. Effective management of high-quality implementation of the Educational Program and improvement of the mechanisms for managing the educational process	1. Provision of OP with regulatory documents of the Ministry of Education and Science of the Republic of Kazakhstan: GOSO, MUP, RUP internal regulatory documents (Regulations, Instructions. (forms)	Head of Department, Head of the Educational Program, University Administration	Formation of requests for the acquisition of regulatory documents in the Ministry of Education and Science of the Republic of Kazakhstan, the Russian Unified Military-Civilian Academy, and the Armed Forces of the Russian Federation. Work with the Department of Analysis and Strategic Development, the Quality Management Department
	2. Improving the structure of the Educational Program	Head of Department, Head of the Office of the President, University Administration	Formation and optimization of the educational program (30% annual update, taking into account scientific achievements, labor market requirements, partners, and analysis of students' satisfaction and needs)
	3. Development and improvement of the modular principle of forming the Educational Program.	Head of the Department, Head of the Educational Program	Formation of modules taking into account the logical and meaningful interconnection of disciplines. Ensuring a unified methodological approach to teaching the module. Forming a contingent for independent work, taking into account the integrated content of the educational material
	4. Improvement of the Modular Educational Plan (updatability). Strengthening of popular scientific, educational disciplines and promising areas	Head of the Department, Head of the Educational Program	Monitoring and analysis of employer needs and graduate satisfaction. Analysis of current international experience in the direction of EP
	5. Cooperation with manufacturing companies and government agencies to train specialists in electronics, robotics, mechatronics, medicine, telecommunications, and IT technologies,	Head of Department, Head of the Office of the President,	Holding master classes and seminars with the company's participation. Participation in organizing work practices

	organize internships, and provide employment opportunities for graduates	University Administration academic staff	
	6. Development and implementation of a multilingual training program for specialists in the field of	Head of Department	Preparation of programs, advanced training for teaching staff, and improvement of foreign language proficiency.
2. Training of competitive personnel	1. Improving the educational process by introducing modern educational technologies	Head of Department, Head of the Office of the President, University Administration	Professional development of teaching staff. Discussion of improving teaching methods at the department's and faculty's methodological seminar. Use of interactive teaching methods
	2. Development and improvement of the CED, taking into account the proposals of stakeholders, primarily the opinions of employers	Head of Department, Head of the Office of the President, University Administration	Annual updating of the Modular Educational Plan's disciplines based on employer suggestions. Working with employers
	3. Strengthening the practical training of students at enterprises	Head of Department, Head of the Educational Program, University Administration	Conclusion of agreements on interaction and cooperation with the city's leading IT enterprises and leading telecommunications companies in the region and the republic. Work with the Department of International Cooperation and Academic Mobility.
	4. Formation of a high-quality contingent of students	Head of the Department, university management. Department	Career guidance plan, constant updating of the department's website.
3. Improving the conditions for high-quality staffing of the OP	1. Professional development of teaching staff to organize work in new conditions	Head of the Department, university management. Department	Advanced training courses and internships in the field of the taught disciplines (training of in-house personnel, improvement of German/English language skills)
	2. Sharing teaching staff experience through academic mobility with partner universities	Head of the Department,	Academic mobility of teaching staff

	abroad.	university management	
	3. Inviting leading scientists from partner universities	Head of the Department, university management. Department	Attracting employer partners and OP graduates to guest lectures, training, discussion of the MEP at the Departmental Educational and Methodological Council. Information to place on the website of the University of AUES https://aues.edu.kz
	4. Increase in the proportion of PhD-holding faculty members at the department	Head of the Department.,	Updating the department's teaching staff based on continuity: - attracting the most competent PhD graduates and practitioners to teaching and research activities.
4. Research and Innovation Activities in the Development of the OPC	1. Activation of scientific research at the department	Head of the Department academic staff	Involvement of teaching staff and students in funded research projects.
	2. Participation in grant and contract research and projects	Head of the Department academic staff	Increase in the number of works with an innovative focus, application for an innovative patent and its implementation, introduction of results into the educational process, publications in journals with a high IF and foreign ranking journals
	3. Encouraging and motivating students to actively participate in scientific activities	Head of the Department academic staff	Participation of students in national and international competitions. Involvement of students in departmental research. Increase in the number of students in funded research and development.
	4. Increase in publications by PPS in journals with a non-zero impact factor	Head of the Department academic staff	Preparation of scientific publications in journals with impact factors that are included in the international scientometric databases of Tomson Reuters and Scopus.)
5. Development of the resource potential for the implementation of the OP	1. Purchase of office equipment, scientific equipment, technical training aids, visual aids, etc.	Head of Department, Head of the Educational Program, University Administration	Annual procurement plans
	2. Purchase of new laboratory equipment	Head of the	Annual procurement plans

		Department academic staff	
	3. Development of the department's information and educational resources (website, portal, electronic teaching aids, etc.)	Head of the Department academic staff	Activities to Develop the University's Information and Educational Resources
	4. Development of various forms of material and moral incentives for teaching staff	Head of the Department	Ranking of the teaching staff

MEASURES TO REDUCE THE IMPACT OF RISKS

The following activities are used in the implementation of a joint educational program to reduce risks:

№ п/п	Naming of possible risks	Measures to eliminate them
1	Insufficient provision of new educational and methodological literature on professional disciplines.	To plan the annual publication of scientific and educational literature by the faculty of the departments in accordance with the working curriculum of the students and to purchase it from outside
2	The traditional way of conducting classes	To improve and implement innovative teaching technologies in the educational process
3	Traditional classrooms and laboratories	Creation of state-of-the-art specialized classrooms and research laboratories
4	Rejuvenation of teaching and scientific staff	Training of highly qualified scientific personnel through master's and doctoral programs (PhD) in accordance with modern requirements

Head of the Educational Program _____ Yussupova S.A.

Head of the EE Department _____ Orazalieva S.K.

Director of ITSE _____ K.A.Alipbayev