



NJSC SHAKARIM UNIVERSITY OF SEMEY

DEVELOPMENT PLAN EDUCATIONAL PROGRAM

7M07101 - Heat Power Engineering

Semey

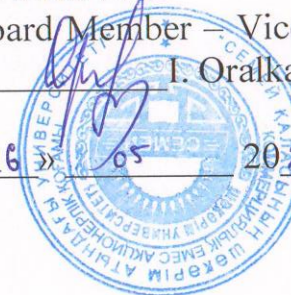
"SHAKARIM UNIVERSITY OF SEMEY"

APPROVED

Board Member – Vice-Rector for Academic Affairs


I. Oralkanova

«26» 05 2023 г.



**EDUCATIONAL PROGRAM DEVELOPMENT PLAN
7M07101 – "Heat power engineering"
for 2023-2025**

Semey 2023 г.

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1. Passport of the Bachelor's/Master's Degree Development Plan 7M07101 – "Heat power engineering"
 (Name of the ED)

1	The basis for the development	Strategic Plan of Shakarim University for 2021-2025 Faculty work plan
2	Terms of implementation	2023-2025
3	Expected results of implementation	Training of competitive specialists with deep modern knowledge in the field of thermal power engineering, including in the fuel and energy sector, in the field of production, transformation and transportation of thermal energy

2. Analytical justification of ED

2.1 Information about the educational program

The educational program has been developed in accordance with the National Qualifications Framework and Professional Standards, according to the Dublin Descriptors and the European Qualifications Framework. The typical period of mastering the master's degree program is 2 years.

Educational program «7M07101 – «Heat Power Engineering»» developed by the Academic Committee

Reviewed at the meeting of the Quality Assurance Commission of the Faculty of Engineering and Technology (Protocol No. 4/6 of 10.04.2023)

Approved at the meeting of the Academic Council of the University (Protocol No. 8 of 04/25/2023).

The main criterion for the completion of the educational process is the development of at least 120 credits, with the award of a degree _____ Master of Technical Sciences _____.

Training under the educational program 7M07101-Thermal Power Engineering is carried out at the Department of Technical Physics and Thermal Power Engineering of the Faculty of Engineering and Technology. During the implementation of the educational program, the peculiarities of the preparation of undergraduate's characteristic of Shakarim University and the region are taken into account.

2.2 Information about students

Academic year	2023-2024 academic year	2024-2025 academic year
The basis of training		
Grant	5	5
Contract	2	2
Total	7	7

2.3 Internal and external conditions for the development of EP

The academic policy of the Department "Technical Physics and Heat Power Engineering", implementing of the EP "Heat Power Engineering", is aimed at using innovative teaching technologies based on best practices in teaching basic and core disciplines, on the quality of teaching using modern learning strategies, modern teaching methods in higher education. Undergraduates and teaching staff of the Department of "Technical Physics and Heat Power Engineering" have unlimited access to information and educational resources and electronic library systems necessary to perform independent educational and research work. Electronic information resources: full access to databases – Scopus, ScienceDirect, Electronic library system "Polpred", Cyberleninka, and Presidential Library named after B.N. Yeltsin.

Educational and laboratory classrooms of the department "Technical Physics and Heat Power Engineering" are equipped with modern equipment, comply with current sanitary standards, fire safety requirements, qualification requirements for the activities of educational organizations. One discipline is held on the basis of a branch of the department in the RSE National Nuclear Center of the Republic of Kazakhstan.

The classrooms of the Department of Technical Physics and Heat Power Engineering are connected to the WI-FI network for online conferences, lectures, seminars with the participation of leading scientists of Kazakhstan, near and far abroad. The Portal of educational resources of the Shakarim Semey University operates ([http://ais.semgu.kz /](http://ais.semgu.kz/)), which contains lectures, videos, hyperlinks, tasks for self-examination, presentations on topics, textbooks and other educational and methodological content on the studied disciplines of the EP, the content of which the teaching staff uses in the classroom, and to which students have round-the-clock access.

All types of practices implemented within the framework of the EP are held on the basis of "Teplokommunenergo", NC "Radioecological Research".

The practice bases meet the requirements and content of the practice.

2.4 Information about teaching staff implementing the educational program

The teaching staff of the Department of "Technical Physics and Heat Power Engineering", which ensures the implementation of the OP «Heat Power Engineering», is:

№	Indicators	Unit of measure	2023-2024 academic year	2024-2025 academic year
1	The share of teaching staff with a degree in the EP	%	100	100
2	Including the share of teaching staff with a degree in the DB cycle	%	100	100

The Department of Technical Physics and Heat Power Engineering carries out the educational process at three levels of study: bachelor's degree, Master's degree and PhD doctorate. The formation of scientific and pedagogical personnel at the department is carried out by training through a master's degree, PhD doctoral studies, advanced training of the teaching staff.

EP teachers undergo advanced training in leading universities of Kazakhstan (according to the FPC plan) and training seminars held by the Ministry of Internal Affairs of the Republic of Kazakhstan, universities and other organizations.

The teaching staff of the EP "Heat power engineering" participates in competitions for grant financing, program-targeted financing of projects, the administrator of which are the Ministry of Education and Science of the Republic of Kazakhstan, development institutes. The scientific direction of the department is connected with research in the field of solving scientific and practical problems in various areas of energy. The teaching staff of the department has a high scientific and methodological publication activity. The results of the scientific activity of teachers are reflected in scientific publications with an impact factor. Scientists of the department of "Technical Physics and Heat Power Engineering" have the Hirsch index (h-index) in the Webofsciences and Scopus databases.

2.5 Characteristics of the achievements of the EP

EP "Teploenergetika" in 2020 successfully passed specialized accreditation in the ARQA agency for a period of 5 years (Registration number HE – SA – 000197 dated July 02, 2020).

3. The main objectives of the EP development plan

In accordance with the Strategic Development Plan of the University for the Effective Implementation of the OP "Heat power engineering", the following tasks are defined:

- Providing high-quality training of competitive specialists,
- Development and implementation of scientific projects,
- Development of human resources,
- Strengthening of the material and technical base,
- Development of international cooperation.

The expected final results assume: participation in funded grant projects, publication activity of teaching staff in rating publications with a non-zero impact factor, development and operation of joint educational programs with foreign universities, implementation of research results in the educational process, involvement of students in research, academic mobility of students and teaching staff.

4. Risk analysis of EP

Identification and assessment of risks of EP "Heat power engineering" is carried out in accordance with the Strategic Development Plan of the University until 2025. The mechanism for monitoring possible risks of EP "Heat power engineering" is surveys and questionnaires of students with satisfaction with the organization of the educational process, the quality of teaching, material and technical base. Questionnaires of employers who evaluate the quality of training of specialists are systematically monitored. The results of the survey and risk monitoring are analyzed and used in the future when updating educational programs.

No	Name of risks	Measures to eliminate
1	Reduction of the contingent of students in the EP	Strengthen career guidance work
2	Insufficient development of external and internal	Identification of universities for academic mobility of

	academic mobility of students and teaching staff	undergraduates and conclusion of contracts
3	The risk of reducing the professional and teaching staff by EP	Work out a system of support and stimulation of teaching staff
4	Changing the needs and priorities of students	Increasing the level of material and technical equipment of the department and increasing the prestige of postgraduate education on the part of employers.

5. Action plan for the development of the EP

№	Criteria	Expected results	Unit of measure	2023-2024		2024-2025	
				Plan	Actual execution	Plan	Actual execution
Direction 1. Educational and methodological support							
1.1	Updating the educational program based on professional standards, taking into account the recommendations of employers	Conducting an examination of the Educational program "Heat Power Engineering" in order to increase the practice orientation and development of professional competencies of graduates	Fact.	If changing the standard		If changing the standard	

1.2	Monitoring and updating catalogs of elective disciplines in accordance with the development of key and professional competencies, the demands of the labor market	Improving the quality of the content of educational programs by including elective courses aimed at developing the key and professional competencies of graduates in accordance with the demands of the labor market.	Fact.	At the request of employers		At the request of employers	
1.3	Introduction of modern learning technologies into the educational process, contributing to the development of cognitive activity, communicative ability of students	Improving the quality of teaching academic disciplines, taking into account the novelty and variety of forms of work that contribute to the development of cognitive activity.	Fact.	+		+	
1.3.1	Introduction of mass open online courses (MOOCs) into the educational process according to the educational program <u>Heat Power Engineering</u>	Introduction of disciplines into the educational process improving the quality of teaching academic disciplines, taking into account the novelty and diversity of forms of work that contribute to the development of cognitive activity.	ent.	-		-	

1.4	Involvement of social partners and employers in the development, examination of the implementation of educational programs	Improving the quality of implemented educational programs taking into account market demands and recommendations of employers	ent.	2		2	
1.5	Development and implementation of elective courses in English	Introduction of disciplines in English into the educational process	ent.	-		-	
1.6	Conducting seminars and round tables on the application of innovative technologies in the educational process	Introduction of innovative technologies in the educational process	ent.	-		1	
1.7	Publication of educational, methodical and scientific literature on the implemented EP	Improvement of educational and methodological support in the disciplines of the implemented educational programs	ent.	-		1	
1.8	Conclusion of contracts with foreign and domestic partner universities in order to develop academic exchange of students of all levels and teaching staff	Creation of a database of foreign and domestic partner universities for the development of academic exchange of students of all levels and teaching staff	ent.	-		-	


1.9	Inviting students from partner universities to study for a semester, short-term internships, internships, etc.	Development of international recognition of educational programs, implementation of academic mobility programs for students	hum.	-		-	
1.10	Participation of teaching staff and students in international academic exchange programs	Development of international cooperation with foreign universities implementing educational programs in the field of Heat power engineering	hum.	-		-	
1.11	Development of outgoing academic mobility of teaching staff and students in the direction of Heat Power Engineering	Improvement of the educational program based on the use of the experience of implementing such programs in leading foreign Universities	hum.	-		-	
Direction 2. Professional and teaching staff							
2.1	Professional development and training of scientific and pedagogical personnel for the implementation of educational programs once every 5 years	The share of teaching staff who have passed advanced training at the national and international level is at least 20%	hum.	1		1	
2.2	Advanced training, retraining, internships of teaching staff at the international level	Completion of at least 2 teachers of the advanced training program, retraining, internships of teaching staff at the international level	hum.	2		2	

2.3	Promotion of publications of the works of teaching staff in international publications indexed by the Web of Science and Scopus databases	Increase in the share of teaching staff who have published the results of scientific research in publications indexed by the Web of Science and Scopus databases – at least 30% of the total number of teaching staff	%	30		30	
2.4	Involvement of practical specialists in teaching and scientific activities	Participation in the implementation of educational programs of practitioners (at least 20% of specialists)	%	20		20	
Direction 3. Internationalization of educational programs							
3.1	Conclusion of agreements on international cooperation with foreign universities	Implementation of joint projects, preparation of scientific publications with foreign partners, creation of bases for scientific internships of students	ent..	-		-	
3.2	Attracting foreign students to study under the educational program "Heat Power Engineering"	Increasing the number of foreign students	hum.	-		-	
3.3	Organization of joint scientific and practical events with international partners	Improving the efficiency of scientific and methodological activities of teaching staff, exchange of experience with foreign partners	ent.	1		1	

3.4	Invitation of foreign specialists to give lectures and consultations on master's projects and dissertations	Improvement of the content component of educational programs based on the introduction of the experience of foreign specialists in the implementation of educational programs	ent.	1		-	
3.5	Expansion of cooperation with Leading foreign scientific and educational organizations in order to attract the most qualified foreign specialists to the implementation of educational programs	Formation of key and professional competencies in accordance with the practice of leading universities	hum.	1		-	
Direction 4. Logistics and digitalization							
4.1	Systematic equipment of classrooms with technical training tools (projectors, panels, interactive and multimedia whiteboards, multifunction devices, webcam, projector screen, etc.)	Equipping classrooms assigned to the department with technical training tools (projectors, panels, interactive and multimedia whiteboards, multifunctional devices, webcam, projector screen, etc.)	ent.	-		-	

4.2	Automation of the educational process (testing, session management, student contingent movement, dean's office, department, teaching staff workload, schedule, library, syllabuses)	Information management based on the automation of the educational process (testing, session management, student contingent movement, dean's office, department, teaching staff workload, schedule, library, syllabuses)	fact.	+		+	
4.3	Replenishment of the full-text database of research results of teaching staff and students, teaching staff (articles, monographs, etc.)	Increase in the number of results of scientific works of scientists, research of teaching staff and students, teaching staff (articles, monographs, etc.)	ent.	5		5	

4.4	Expansion of the fund of scientific and educational literature, including on electronic media for implemented educational programs	Ensuring the implementation of educational programs based on modern educational and information resources, including on electronic media	%	10		10	
4.5	Monitoring the content and improvement of the faculty's website	Formation of the faculty's website on various aspects of the implementation of educational programs.	%	20		20	

Head of the Department  O.A. Stepanova


REVIEWED

at the meeting of the Quality Assurance Commission of the Faculty of Engineering and Technology

Minutes of the meeting № 5 May, «25» 2023 r.

President QAC  G.B. Abdilova

AGREED

Dean of the Faculty  G.N. Nurimkhan
May, «26» 2023 r.