

ACHIEVEMENTS IN THE FIELD OF QUALITY
Department of «Mechanical Engineering and Standardization» for the 2023–2024 Academic Year

Directions	Achievements
1 Management	19 department meetings were held, during which all scheduled issues were reviewed and resolved, including matters related to the work discipline of the teaching and administrative staff.
2 Educational and methodological	<p>Computer technologies are utilized across all disciplines assigned to the department (100%). Student attendance at classes is 90%, with an academic performance rate of 85%. Faculty members conducted 7 peer observations and 14 open classes. In the Atameken rating, the undergraduate educational programs 6B07151 - Mechanical Engineering and Reverse Engineering and 6B07501 - Standardization, Certification, and Metrology (by industries) secured 1st place, while 6B07102 - Mechanical Engineering took 3rd place.</p> <p>As part of informal education, students from the following groups participated in online courses on the Coursera platform: SCM-301, ME-402, SCM -402, MERE-102, MERE-101, SCM-101(q), MERE -202, ME-202(s), SCM-201, SCM-301, MMe-12n, MMe-12n/2, DMe-12, DMe-12/2, DMe-32 (a total of 62 students earned 214 certificates). Following the first stage of Coursera participation, E. Tochilin, a student from group ME-202, completed 17 courses and received the DISTINGUISHED EXCELLENCE AWARD from Coursera's CEO, Jeff Maggioncalda.</p> <p>Under the dual education program for the 2023-2024 academic year, as per Order No. 3.1-05/2282 dated October 5, 2023, and agreements dated September 1, 2023, and January 15, 2024, seven students were enrolled in dual education: A.T. Dyusembinov, group ME-401 – LLP Prommashkomplekt, V.V. Kuzmina, S.V. Karpovich, group ME-402 – LLP Prommashkomplekt, O.G. Podolyan, group SCM-202(2d) – JSC Aluminum of Kazakhstan, R.B. Zarkyn, group ME-302(s) – LLP Pavlodar Plant of Pipeline Valves, A.A. Porokhov, group ME-302(s) – LLP Temirmash Plant, A.S. Nurtaev, group ME-302(s) – JSC NC KTZ Pavlodar branch of the mainline network, B.V. Zagozin, A.O. Strelyaev, A.A. Selyukov, group ME-402 – LLP Technological Lines.</p> <p>As part of the innovative educational program 6B07151 – Mechanical Engineering and Reverse Engineering, field trips were conducted in March and April 2024 to enterprises such as ERG Service. Pavlodar Mechanical Plant and KSP Steel for students of groups MERE-101, MERE-102, MERE-201, MERE-202, within the framework of the micro-qualification CNC Machine Operator (Level 2). Additionally, for the program 6B07501 – Standardization, Certification, and Metrology (by industries), groups SCM-101 and SCM-102 also participated under the guidance of the Head of Department, Zh.K. Mussina, and the faculty team.</p>
3 Scientific	<p>During the 2023-2024 academic year, scientific research was conducted under grant-funded projects, including:</p> <p>1) Grant IRN AR09058231: «Research and Design of Resource- and Energy-Saving Cutting Tools», under Contract No. 66-KMU-2 dated February 24, 2021. Total funding for 2021-2023: 45234543 KZT. Funding allocated for 2023: 12682722.83 KZT (twelve million six hundred eighty-two thousand seven hundred twenty-two tenge). Project Leader: Professor A.Zh. Kassenov. Team Members: Senior Researcher A.V. Mazdubay; A.Zh. Taskarina; R.B. Mukanov; Junior Researcher D.A. Iskakova; T.L. Lub.</p>



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3 Scientific	<p>2) IRN AR 19678887 «Research on the Tribotechnical Characteristics of Resource- and Energy-Saving Cutting Tools», under Contract № 241/23-25 dated 03.08.2023. Total project budget 97 965 971.40 KZT. Funding for 2023 was 27 644 510 KZT. Funding for 2024 was 35 489 725.2 KZT. Project Leader: Professor Kassenov A.Zh.; Team Members: Abishev K.K.; Itybayeva G.T., Mussina Zh.K., Mukanov R.B., Mazdubay A.V., Taskarina A.Zh., Iskakova D.A., Lub T.L., Makyshev A.A., Amangazy N.E. (Master’s student of group MMe-22n/2), Magellan D.A. (Master’s student of group MMe-22n), Kabulova A.U. (student of group MZh-401), Tukaev I.T. (student of group ME-202(s))</p> <p>3) IRN API 9174917 «Research and improvement of high-speed milling of hard-to-machine materials through process modeling and cutting mode optimization», under Contract No. 141-ЖФ4 dated May 17, 2023. Funding for 2023–2025 totals 20,479,547 tenge. Funding for 2023 amounted to 6474265 tenge. Funding for 2024 amounted to 7452702 (seven million four hundred fifty-two thousand seven hundred two) tenge. Project supervisor: Associate Professor (Docent) Tussupova S.O.</p> <p>The department hosts a student engineering design bureau focused on mechanical engineering and energy. Within the bureau, research and development are conducted in the following area: Non-traditional technologies for generating electricity using renewable energy sources.</p> <p>R&D activities included «Research into parameters and development of designs for small-scale wind energy installations». Progress on the development of a 0.3 kW prototype: 85% (with participation from doctoral student Nurkimbayev S.M., group DMe-32). A method for measuring torque based on strain gauge technology has been developed. A test stand has been manufactured, with 90% completion. A technical project for a wind-powered water-lifting system with a capacity of up to 2.5 m³/hour was developed in collaboration with master’s student Meirbek R. as part of his thesis. A standard drum brake was upgraded to enable its use in the wind-powered water-lifting system, with participation from students Radchenko D. and Chernov N. from group MERE-102 (scientific supervisor, Professor I. A. Shumeiko).</p> <p>In the Republican Research Contest for Students (RICS) on the topic «Research and improvement of the quality of machining complex-profile parts», student Zhantemirov A.S. from group MERE-202 received a second-degree diploma, supervised by Candidate of Technical Sciences, Professor Mussina Zh.K. Student Kabylova A.U. from group ME-401 received a third-degree diploma, supervised by PhD and Senior Lecturer Suleimenov A.D.</p> <p>In April 2024, the «XXIV Satpayev Readings» took place, with participation from students of all years. Winners of the scientific conference included: First-degree diploma: Student Radchenko D.A. from group MERE-102.</p> <p>Second-degree diploma: Student Onoprienko V.I. from group ME-302 (scientific supervisor: Lub T.L.); Third-degree diploma: Student Omarov R.K. from group ME-302 (scientific supervisor: Sapinov R.V.); First-degree diploma: Student Fedorenko K.A. from group SCM-302 (scientific supervisor: Miller S.A.); Second-degree diplomas: Students Askerbayeva G.A. and Komek A.N. from group SCM-401; Third-degree diploma: Student Sailaubayeva A.A. from group SCM-401 (scientific supervisor: Tussupova S.O.).</p> <p>In April 2024, the second round of the XVI Republican Subject Olympiad in the 6B07102-Mechanical Engineering educational program took place in Almaty at the Kazakh National Agrarian Research University, involving students from the 3rd and 4th years. As a result, Zagozin B. became a prize-winner and received a third-degree diploma under the guidance of Associate Professor (Docent) Sapinov R.V.</p>



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3 Scientific	<p>In May 2024, the second round of the XVI Republican Subject Olympiad among students of higher educational institutions of the Republic of Kazakhstan in the B076 program group Standardization, Certification, and Metrology (by industry) took place in Almaty, hosted by JSC «Almaty Technological University». Participants included Kanatova M.Zh., Ordabayeva A.D., and Korol A.A. As a result of the Olympiad: Kanatova M.Zh. received a first-degree diploma; Kanatova M.Zh., Ordabayeva A.D., and Korol A.A. won second place in the team competition under the guidance of Senior Lecturer and Team Leader Kusainova R.B. In June 2024, Zarqin R., a student from group ME-302(s), participated in the second round of the corporate professional skills competition ERG SKILLS 2024, organized by LLP «ERG Service». He earned a certificate worth 100,000 tenge for third place in the «Turning» competency (expert-compatriot: Department Head Mussina Zh.K., Laboratory Head Tkachuk A.A.). In the same competition, students Franz Mayer and Philipp Mayer from group MERE-102(s) participated in the «Fitting» competency under the supervision of expert-compatriot Department Head Mussina Zh.K. and Laboratory Head Tkachuk A.A. Graduate students received implementation certificates for the results of their dissertation research in production: Group MMe-22n/2: Amangazy N.E. – in the Technical Control Department and Research Laboratory of LLP «ERG Service»; Sholpanov B.E. – for use in the calibration laboratory of PF JSC «National Center for Expertise and Certification»; Group MMe-22n: Karimova D.S. – to improve the productivity of railway wheel production at LLP «Prommashkomplekt»; Magellan D.A. – based on experimental research, a decision was made to implement the proposed welding method at LLP «Pavlodar Pipe Fittings Plant»; Group MSC-22n/2: Abdi M.A. – at LLP «Shygys Zholdary»; Group MERE-22n: Zhanymkhan Zh. and Khasan G. – in the production processes of LLP «R.W.S. Binding». Student Dzhumabekova A.A. from group SSM-102 received a certificate for successfully completing the ENACTUS Kazakhstan Winter CAMP 2024, a 72-hour intensive business program on leadership and entrepreneurship development. Student Fedorenko K. from group SCM-302 participated in the Ecosystem of Student Entrepreneurship regional meetup in Astana, held from April 21 to 24, 2024, titled Meet Up Astana 2024, and received a certificate.</p>
4 Educational	<p>Curatorial hours were conducted in accordance with the educational work plan. Events included Knowledge Day, «Lessons on the Constitution», «Health Day», Student Initiation, «Independence Day of the Republic of Kazakhstan», New Year’s celebrations, Nauryz festivities, and the Unity Day of the Peoples of Kazakhstan. Students participated in various competitions and sports events, earning certificates, diplomas, and prizes.</p> <p>In November 2023, students from groups SCM-101, SCM-102, and MERE-102 attended a classical music concert at the Regional Philharmonic. In the same month, students from group SCM-101 attended a creative evening dedicated to Professor Abilov Sh.K., held at the City Palace of Culture named after Estay. In January 2024, students from groups SCM-101, SCM-102, MERE-101, and MERE-102 visited the traveling exhibition «125 Years of Kazakhstan’s Kanish». In February 2024, students from group SCM-301, including Astanova F., Dybykanova M., and Sarybay A., participated in the training program «Debt-Free Society» organized by the Amanat Party. The program focused on teaching citizens methods and forms of effective financial management and expense optimization.</p> <p>In May 2024, Tochilin E., a student from group ME-302, took second place in the WRPf Asian Championship Almaty 2024 powerlifting competition held in Almaty.</p>



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5 Household	Work on cleaning the area assigned to the department within the territory of Toraighyrov University NPJSC was carried out according to schedule. Educational equipment for academic programs was purchased based on requests for state-funded and contract-based R&D projects, totaling 29539489.2 tenge.
6 Marketing and career guidance	According to the department faculty's work plan, career guidance activities were conducted in schools and colleges across the city and region. Faculty participated in open house events and invited company executives to meet with graduates. In 2024, under the state educational grant program, the following students were admitted: 11 students to groups with instruction in the state language; 22 students to groups with instruction in Russian; 3 master's students with instruction in Russian; 5 doctoral students with instruction in Russian.

Discussed and approved at the department meeting (Protocol №. 3 dated September 24, 2024)

**Head of the Department of
Mechanical Engineering and Standardization**



Mussina Zh.K.

