

Educational Activities

Samara State Technical University (SSTU) annually affirms its status as one of the key systemic centers of competencies responsible for training experts and practitioners who make a direct contribution to achieving sustainable development goals and ensuring the environmental safety of the state.

A crucial element of the university's ecological component is the continual enhancement of its environmental management system (EMS), aligning with the university's strategic goals to reduce anthropogenic impact and implement sustainable development principles. In 2024, during an inspection, SSTU confirmed the compliance of the implemented EMS with the requirements of GOST R ISO 14001-2016 (certificate) concerning activities in secondary general, secondary vocational, higher, and additional professional education, as well as scientific research and development.

Environmental education in 2024 is provided through five bachelor's programs and three master's programs, including:

- 08.03.01 — "Construction," with profiles in "Water Supply and Sewerage" and "Hydraulic Engineering Construction." Duration: 4 years. Graduate qualification: Bachelor.
- 18.03.02 — "Energy- and Resource-Saving Processes in Chemical Technology, Petrochemicals, and Biotechnology" with a profile in "Environmental Protection and Rational Use of Natural Resources." Duration: 4 years. Graduate qualification: Bachelor. This program is among the priority directions for the modernization and technological development of the Russian economy and is accredited by the international agency for education quality control and career development (ACCORK) (2021–2025) and the European Chemistry Thematic Network Association (ECTN) (2021–2026).
- 19.03.01 — "Biotechnology," with a profile in "Bioengineering and Industrial Ecology." Full-time duration: 4 years. Graduate qualification: Bachelor. This is a new educational program, with the first cohort of 18 students admitted in 2024.

- 20.03.01 — "Technosphere Safety," with profiles in "Engineering Environmental Protection" and "Emergency Protection." Full-time duration: 4 years. Graduate qualification: Bachelor.
- 38.03.04 — "State and Municipal Administration," with a profile in "Sustainable Development State Administration." Full-time duration: 4 years. Graduate qualification: Bachelor. This is a new program, with the first intake of 7 students in 2024.

Master's programs include:

- 08.04.01 — "Construction," with profiles such as "Water Supply for Cities and Industrial Enterprises," "Heating, Ventilation, and Air Quality Control Systems," "Hydraulic Engineering Construction," "Advanced Water Treatment and Sludge Processing Technologies," and "Sewerage and Wastewater Treatment." Duration: 2 years. Graduate qualification: Master.
- 18.04.02 — "Energy- and Resource-Saving Processes in Chemical Technology, Petrochemicals, and Biotechnology," master's program "Industrial Ecology and Rational Use of Natural Resources." Duration: 2 years. Graduate qualification: Master. Developed as part of the international TEMPUS project "Advanced M.Sc. Program in Ecology for Volga-Caspian Basin," in close collaboration with the universities of Stuttgart, Warsaw, Parma, and Barcelona. The program is accredited by ACCORK (2021–2025) and ECTN (2021–2026).
- 20.04.01 — "Technosphere Safety," master's programs include "Monitoring Territories with High Anthropogenic Load," "Technosphere Safety in the Oil and Gas Industry," and "Engineering Environmental Protection and Rational Use of Natural Resources." Full-time duration: 2 years. Graduate qualification: Master.

The total number of students enrolled in these bachelor's and master's programs in the reporting year was 681.

In 2024, a broad range of 45 retraining and advanced training programs in rational natural resource usage and sustainable development were implemented upon orders from companies such as AO "BPO Sibpribormash," AO "Polymer," AO "Samaraneftegaz," AO "Transneft-Druzhba," AO "Transneft-Privolga," AO "Clean City," AO "Ecology," AO

"Giprotruboprovod," AO "Svyaztransneft," LLC "STK-Group," LLC SPP Razvitie, LLC Transneft Supervision, PJSC "Transneft," PJSC Sberbank, PJSC "T Plus," "Promutilizatsiya" Group, FKP "Scientific-Production Association Kazan Precision Engineering Plant," FSUE "Russian Television and Radio Broadcasting Network," and the Interregional Office of the Federal Service for Supervision of Natural Resource Usage (Rosprirodnadzor) for the Samara and Ulyanovsk regions, as well as private individuals. The total number of listeners who successfully completed these programs amounted to 574.

Highly qualified specialist training is conducted through postgraduate programs in scientific specialties including 1.5.15 — Ecology; 1.6.21 — Geoecology; 2.1.4 — Water Supply, Sewerage, Building Systems for Water Resource Protection, forming professional competencies essential for fundamental and applied research in environmental protection, rational resource use, and environmental safety assurance. In the reporting year, 22 postgraduate students studied under these programs, three of whom were on a contract basis.

During the reporting period, the university not only maintained but significantly strengthened its position as a key entity in forming highly qualified personnel potential by expanding its portfolio of educational and research projects, modernizing educational programs to meet industrial demands, and actively engaging in addressing pressing environmental issues.

The task of early involvement of schoolchildren in the university community, including early professional orientation and scientific engagement, is carried out through the Center for the Development of Modern Competencies "House of Scientific Collaboration named after N.N. Semenov" (DNA) at SSTU, as part of the "Professionalitet" initiative of the national project "Youth and Children." The center implements additional general and developmental educational programs in natural sciences and technical fields such as:

- Materials Chemistry
- Reverse Engineering in Industry

- Bioengineering: The Cell as a Universal Structural and Functional Unit of All Living Organisms
- Geoecology
- Cognitive Chemistry and Fundamentals of Nanochemistry
- Veterinary from A to Z
- Food Chemistry
- Chemistry of Elements
- Chemical Experimentarium
- General Ecology
- School of Bioengineering: The Plant Organism as an Object of Bioengineering
- Ecological and Geographical Practicum
- Energy of the Future
- Green Chemistry
- Seeing NANO
- Basics of Veterinary Science and Biotechnology
- Fundamentals of Agrochemistry
- School of the Happy Dairy Farmer
- Modeling Energy Saving Systems in Residential Buildings
- Industrial Ecology
- Microbiology
- Biotechnology
- Water Chemistry
- Cosmetic Chemistry
- Chemistry as a Field of Wonders
- Experimental Chemistry
- Experimental Ecology
- Applied Ecology
- Ecograd
- Exploring Nature

In total, 635 schoolchildren were trained under these general education programs aimed at forming ecological consciousness, acquiring ecological knowledge and skills, and developing ecological culture, supported by grants from the Ministry of Education of the Samara Region.

An effective tool for building individualized educational trajectories for schoolchildren is the organization of supplementary education classes in "General and Industrial Ecology" for students in grades 5–8 of Samara region schools at the SSTU "Boiling Point" center, contributing to the strategic task of training motivated and competent specialists under the national technological development goals.

The educational process is supported by 80 teaching staff, including 12 Doctors of Science and 33 Candidates of Science. The high level of competence of the teaching staff, characterized by a synthesis of deep theoretical knowledge and significant practical experience in relevant fields, is a key factor in forming a modern educational environment and effectively implementing an interdisciplinary approach in the educational process. This pedagogical strategy's relevance is determined by the global challenges of contemporary times, particularly the issues at the intersection of technological progress and environmental sustainability. Thus, practicing instructors with current experience act not only as knowledge transmitters but also as guides for students in solving real interdisciplinary problems, ultimately meeting societal demands and strategic sustainable development goals. For example, 109 courses (over 50%) of bachelor's, specialist's, and master's programs are dedicated to addressing interdisciplinary tasks within sustainable development goals. The competency-based training model forms the foundation for creating a new generation of specialists capable of solving complex problems at the intersection of disciplines and sectors across all environmental services and administrative bodies from municipal to federal levels. The acquired experience enables graduates not only to apply innovative solutions professionally but also to participate in developing strategies that ensure balanced interaction among economic, environmental, and social systems. Students address current issues of specific companies, learn to conduct audits, evaluate environmental impacts, and develop projects considering the interests of all stakeholders—local communities, businesses, and authorities. In 2024, more than 50% of graduate qualification theses were completed at existing industrial enterprises and technogenic facilities using key tools such as circular economy methods, life cycle assessment (LCA), carbon footprint management, and ESG reporting development.

The annual graduation rate exceeds 150 bachelors and masters. Graduates hold positions as specialized professionals, department heads, state inspectors, and leading ecologists, reflecting the high competitiveness of their professional training. Graduates find employment at enterprises including AO "Kuibyshev Refinery," AO "Novokuybyshevsk Refinery," PJSC "KuibyshevAzot," LLC "SIBUR PoliLab," AO "Samaraneftegaz," Novokuybyshevsk Oil and Additive Plant, AO "Otradnensky Gas Processing Plant," AO "Novokuybyshevsk Petrochemical Company," PJSC "Samaraneftekhimproekt," AO "Giprovostokneft," AO "Transneft," and "Rosneft." The interdisciplinary nature of SSTU's specialist training allows graduates to work in various industries, including the regional offices of Rosprirodnadzor and Rostekhnadzor, the Ministry of Forestry, Environmental Protection and Nature Management of the Samara Region, units of PJSC "Gazprom," JSC "Privolzhskie Magistralnye Neftoprovidy," PJSC "Samaraneftekhimproekt," AO "Giprovostokneft," Kuibyshev, Novokuybyshevsk, and Syzran refineries, NGDU "Buzulukneft," "Sergievskneft," LLC "SamaraNIPINeft," LLC "NPO Ecological Safety," and administrations of cities and districts of the Samara region.

Representation of SSTU in international and national events ensures the university's integration into the global scientific and educational space, enriching educational programs and research with up-to-date approaches in environmental protection and resource conservation.

The educational process aims not only to impart knowledge and skills but also to deeply transform students' personal attitudes and values, fostering ecological responsibility, conscious consumption, and systemic thinking that considers the long-term consequences of decisions made.