

Navoi State University – Theory and Methodology of Education (Technological Education)

Program Duration: 2 years

Mode of Study: Full-time

Program Code: 70111301

Total Workload: 120 ECTS credits

ECTS credits per semester: 30

Overview

The Master's degree program in **Theory and Methodology of Education (Technological Education)** (Program Code: 70111301) at Navoi State University is a two-year, full-time academic program comprising a total workload of 120 ECTS credits (30 ECTS per semester). The program is designed to prepare highly qualified technical and vocational education scholars, engineering pedagogy specialists, technological curriculum developers, instructional designers, and higher education instructors equipped with advanced knowledge in technological education pedagogy, applied engineering fundamentals, digital manufacturing, STEAM integration, and modern vocational training methodologies.

The curriculum integrates theoretical studies in technical didactics, industrial design, material processing technologies, robotics, CAD/CAM systems, and educational ergonomics with innovative instructional design and scientific research. Students gain expertise in developing competency-based technological curricula, implementing hands-on project-based learning, designing interactive digital laboratory modules, and managing technical education processes. The program places strong emphasis on modernizing Uzbekistan's technological and vocational education sector, aligning school technology curricula with modern industrial standards, and fostering technical creativity, engineering thinking, and practical problem-solving skills in learners.

Graduates of this program are fully equipped to pursue careers as university lecturers, technology education research scholars, methodology specialists in vocational education departments, technical school academic coordinators, instructional developers, and educational technology consultants, as well as to continue their studies at the doctoral (PhD) level.

Assessment

A comprehensive and multi-component assessment system is applied in the Master's program in Theory and Methodology of Education (Technological Education) to ensure continuous learning, scientific rigor, practical technical competence, and technological education research proficiency.

1. Course-based assessment

- **Presentations and seminars** – assess students’ ability to analyze, present, and defend research on technological training models, STEAM methodologies, engineering pedagogy, and technical literature in academic settings.
 - **Mini-tests, quizzes, and oral exams** – monitor understanding of core theoretical concepts, technical didactics, material processing fundamentals, technological safety standards, and assessment methods.
 - **Midterm and final examinations** – evaluate theoretical depth, pedagogical diagnostic skills, and technical education problem-solving through written examinations and engineering design case studies.
 - **Portfolio assignments** – compile technological lesson plans, CAD modeling projects, hands-on workshop blueprints, educational assessment rubrics, sample lecture modules, and research paper drafts demonstrating progressive skill development.
 - **Independent assignments** – encourage independent pedagogical literature reviews, comparative technological education system studies, instructional material prototyping, and curriculum evaluation tasks.
2. **Research-based assessment**
- **Scientific Research Work (ITI)** – evaluated through research proposals, laboratory experimental reports, technical prototype evaluations, and defense of technological education research outcomes before the department.
 - **Scientific and Pedagogical Work (IPI)** – evaluated via teaching practice, preparation of university-level lecture materials, practical workshop guides, and academic reporting.
 - **Master’s Thesis (MD/M)** – evaluated based on scientific originality, technical validity, practical relevance to technological education, thesis writing quality, and public defense before the State Attestation Commission.
3. **Practice-based assessment**
- **Educational and Pedagogical Practice** – evaluated through performance in secondary schools, vocational colleges, technical academies, and pedagogical higher education institutions, accompanied by comprehensive practice reports.
 - **Pre-graduation practice** – assessed on the integration of theoretical/empirical technological education research findings and final thesis preparation.
4. **Work-integrated learning**
- **Technological Innovation & Prototyping Projects** – assessed on pedagogical appropriateness, engineering design quality, instructional effectiveness, and alignment with national state educational standards.

Academic Requirements

Admission Requirements-Applicants applying for the Master’s degree program in Theory and Methodology of Education (Technological Education) (Code: 70111301) must satisfy the following criteria:

- **Educational background** – A Bachelor’s degree (or equivalent qualification) in technological education, engineering education, vocational training, mechanical engineering, industrial design, or related technical/educational fields from a recognized higher education institution.
- **Academic excellence** – Applicants holding an honors diploma (*imtiyozli diplom*) are eligible for preferential admission according to current regulations of the Ministry of Higher Education, Science and Innovation of the Republic of Uzbekistan.

- **Language proficiency** – A valid national or international certificate demonstrating at least B2-level foreign language proficiency (CEFR, IELTS, TOEFL, etc.) in English, Russian, or another recognized foreign language.

Graduation Requirements

To be granted the Master of Arts degree in Theory and Methodology of Education (Technological Education), students are required to:

- Complete all compulsory and elective modules specified in the curriculum, accumulating a total of **120 ECTS credits** (30 ECTS per semester).
- Maintain standard academic standing according to Navoi State University regulations (passing marks in all subjects).
- Successfully complete all practical trainings (teaching internship, technical laboratory practice, and pre-graduation practice) with positive performance evaluations.
- Fulfill all research requirements (Scientific Research Work and Scientific-Pedagogical Work).
- Prepare, submit, and successfully defend a **Master's Thesis** demonstrating independent technological education pedagogical research before the State Attestation Commission.
- Pass all required state attestation processes.

Courses Offered

Year 1

Compulsory:

- Research Methodology and Scientific Writing in Technological Education Pedagogy
- Reforms in the Education System under the Development Strategy of New Uzbekistan
- Theoretical Foundations and Modern Paradigms of Technological Education
- Engineering Psychology, Ergonomics, and Technical Creativity Development
- Innovative Methodologies of Teaching Technology and Engineering Disciplines

Elective:

- STEAM Education, Applied Robotics, and Automated Systems in Schools
- Computer-Aided Design (CAD/CAM) and 3D Modeling in Technological Learning
- Digital Educational Technologies and EdTech Tools in Technical Education
- Regulatory Documents, State Standards, and Safety Management in Technology Workshops
- Interactive Teaching Methods and Competency-Based Vocational Training

Year 2

Compulsory:

- Management and Quality Assurance in Technical and Vocational Education
- Modern Material Processing Technologies and Folk Crafts Methodology
- Inclusive Technical Education and Differentiated Workshop Strategies

Elective:

- Industrial Design, Product Prototyping, and Entrepreneurship in School Education

- Diagnostic Methods and Assessment of Technical and Practical Skills
- School-Industry Partnerships and Vocational Guidance Dynamics
- Professional Morality and Ethics in Academic and Engineering Activity
- Applied Electronics, Mechatronics, and Microcontroller Applications
- Ethno-technology, Folk Crafts Preservation, and Culture-Based Production
- Design of Digital Workbooks, Interactive Models, and Virtual Labs

Career Opportunities

Graduates of the Master's degree program in Theory and Methodology of Education (Technological Education) acquire deep theoretical, technical, diagnostic, and methodological expertise, enabling them to pursue careers across educational, administrative, research, industrial, and publishing sectors:

- **University Lecturer / Assistant Professor of Technological Education** in higher education institutions, pedagogical institutes, technical universities, and teacher professional development centers.
- **Technological Education Research Scholar** in vocational research institutes, national curriculum development centers, and educational engineering laboratories.
- **Technology Education Methodologist / Inspector** in regional departments of the Ministry of Preschool and School Education and the Ministry of Higher Education, Science and Innovation.
- **Academic Director / Technical Department Head** in vocational colleges, specialized STEM/STEAM schools, technical lyceums, and private academies.
- **Instructional Designer / Technical Curriculum Developer** in educational publishing houses, EdTech enterprises, and digital learning platforms specializing in technical and vocational training.
- **Vocational Guidance & Skill Assessment Specialist** working on national technical skill standards, vocational orientation, and practical skill certification centers.
- **Technological Education Consultant** providing professional advisory services on workshop safety, school lab modernization, STEAM curriculum integration, and technical equipment procurement.
- **Specialist in Technical Prototyping & Maker Education** directing school fab-labs, maker spaces, and youth technical innovation centers.

Tuition Fees

- **For local students:** Approximate annual tuition – 9,700,000 UZS.
- **For international students:** Approximate annual tuition – 774.28 USD.

(Note: Tuition fees are subject to adjustment in accordance with university policy and foreign currency exchange rates.)

Learning Outcomes

Master's Degree in Theory and Methodology of Education (Technological Education)

Upon successful completion of the program, graduates will be able to:

1. Knowledge

- **1.1.** Demonstrate advanced knowledge of technological pedagogical theories, engineering psychology, technical didactics, and material processing paradigms.
- **1.2.** Understand national state educational standards for technology, STEAM frameworks, modern CAD/CAM software, applied robotics, and industrial safety regulations.
- **1.3.** Explain principles of inclusive technical training, differentiated workshop instruction, ergonomics, folk crafts preservation, and school-industry partnership dynamics.
- **1.4.** Demonstrate knowledge of technological education research design, technical skill diagnostic tools, workshop experiment modeling, and educational statistics.
- **1.5.** Recognize national legislation, industrial reform strategies, educational quality assurance frameworks, and ethical guidelines in Uzbekistan's technical education sector.

2. Skills

- **2.1.** Perform comprehensive theoretical and empirical analyses of technological learning processes, technical skill acquisition, and engineering pedagogical methodologies.
- **2.2.** Design, implement, and evaluate technology school curricula, CAD/CAM projects, hands-on workshop modules, and competency-oriented skill rubrics.
- **2.3.** Develop higher-education course syllabi, lecture modules, practical workshop tasks, and evaluation tools for technological education methodology disciplines.
- **2.4.** Apply modern interactive teaching techniques, digital CAD/CAM tools, robotics kits, and safety-compliant workshop practices in academic and technical environments.
- **2.5.** Prepare scientific research papers, academic reviews, methodological guidelines, technical manuals, and publishable research theses.
- **2.6.** Effectively present technological education research findings, workshop strategies, and technical education policies to academic boards, teaching staff, and public forums in national and foreign languages.

3. Competences

- **3.1. Technical Research & Methodological Competence** – Conduct independent, scientifically grounded, and practical research in technological education, engineering pedagogy, and technical skill development.
- **3.2. Academic Leadership & Workshop Safety Competence** – Direct technical education departments, manage teacher methodology teams, and oversee laboratory safety and modernization initiatives.
- **3.3. Methodological & Higher Education Competence** – Teach technological education subjects at higher education levels using interactive, project-based, and digital pedagogical methods.
- **3.4. Engineering Thinking & Skill Cultivation Competence** – Foster spatial reasoning, technical creativity, practical craftsmanship, and engineering problem-solving capabilities in learners.
- **3.5. Professional Ethics & Industrial Integrity** – Uphold high standards of academic honesty, workshop safety compliance, environmental responsibility, and ethical standards in technological practices.
- **3.6. Lifelong Learning Competence** – Continuously upgrade technical qualifications, adopt global industrial and educational technology innovations, and actively participate in national and international educational conferences and technical networks.