

Navoi State University – Ecology

Program Duration: 2 years

Mode of Study: Full-time

Program Code: 70520202

Total Workload: 120 ECTS credits

ECTS credits per semester: 30

Overview

The Master's degree program in **Ecology** (Program Code: 70520202) 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 ecologists, environmental researchers, and specialists equipped with advanced knowledge in global and regional environmental sustainability, biodiversity conservation, ecosystem monitoring, and modern ecological research methodologies.

The curriculum integrates advanced theoretical instruction, extensive research training, and practical environmental assessments. Students learn to analyze ecological processes, model environmental impacts, utilize geographic information systems (GIS), and develop strategies for natural resource management and sustainable development. The program places strong emphasis on addressing Uzbekistan's regional environmental challenges, such as soil degradation, water scarcity, industrial pollution, and Aral Sea crisis impacts.

Graduates of this program are fully equipped to pursue careers as environmental scientists, ecological consultants, sustainability managers, research officers in scientific institutes, and academic staff in higher education, as well as to continue their research at the doctoral (PhD) level.

Assessment

A comprehensive and multi-component assessment system is applied in the Master's program in Ecology to ensure continuous learning, scientific rigor, and professional development.

1. Course-based assessment

- **Presentations and seminars** – assess students' ability to present, discuss, and defend ecological research, environmental policy analyses, and conservation projects in academic settings.
- **Mini-tests, quizzes, and oral exams** – monitor understanding of core and elective modules, including ecological monitoring, environmental law, bioecology, and GIS technologies.

- **Midterm and final examinations** – evaluate theoretical and practical knowledge through written papers, case studies, and practical field/lab assignments.
- **Portfolio assignments** – track progress through research reports, fieldwork journals, and ecological impact assessment drafts.
- **Independent assignments** – encourage self-directed scientific research, project design, and analytical modeling of environmental data.

2. Research-based assessment

- **Scientific Research Work (ITI)** – evaluated via research project proposals, regular progress reports, and defense of research outcomes before the department.
- **Scientific and Pedagogical Work (IPI)** – evaluated through teaching practice, development of training modules, and scientific reporting.
- **Master's Thesis (MD/M)** – evaluated based on overall scientific rigor, practical relevance, thesis writing quality, and public defense before the State Attestation Commission.

3. Practice-based assessment

- **Field and Industrial Practice** – evaluated through performance in environmental research centers, nature reserves, industrial ecological laboratories, and submitted practice reports.
- **Pre-graduation practice** – assessed on the integration of ecological research findings into practical solutions and final thesis preparation.

4. Work-integrated learning

- **Environmental impact projects & GIS tasks** – assessed on analytical precision, innovative use of digital technologies, and practical relevance to environmental protection needs.

Academic Requirements

Admission Requirements: Applicants applying for the Master's degree program in Ecology (Code: 70520202) must satisfy the following criteria:

- **Educational background** – A Bachelor's degree (or equivalent qualification) in ecology, biology, environmental sciences, natural resources, geography, or related 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 Science degree in Ecology, students are required to:

- Complete all compulsory and elective modules 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 (fieldwork, scientific-research 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 original research and practical solutions to ecological issues before the State Attestation Commission.
- Pass all required state attestation processes.

Courses Offered

Year 1

Compulsory:

- Research Methodology in Natural Sciences
- Reforms in the Education System under the Development Strategy of New Uzbekistan
- Applied Ecology and Global Environmental Issues
- Environmental Monitoring and Bioindication

Elective:

- GIS and Remote Sensing in Environmental Management
- Bioecology of Uzbekistan's Soils
- Issues in the Conservation of Biodiversity and Natural Resources
- Environmental Chemistry and Toxicology
- Regulatory Documents and Laws in Environmental Protection

Year 2

Compulsory:

- Ecosystem Dynamics and Climate Change
- Industrial Ecology and Ecological Audit
- Environmental Impact Assessment (EIA)

Elective:

- Water Resources Management and Hydroecology
- Bio-restoration and Soil Remediation
- Ecotourism and Sustainable Development
- Professional Morality and Bioethics
- Population Ecology and Community Biology
- Urban Ecology and Green Infrastructure
- Aral Sea Region Ecological Restoration Strategies

Career Opportunities

Graduates of the Master's degree program in Ecology acquire comprehensive analytical and field-based skills, opening doors to careers across public, scientific, and private sectors:

- **Researcher or Senior Specialist** at the Academy of Sciences of the Republic of Uzbekistan and its ecological research centers.
- **Environmental Inspector / Officer** at the Ministry of Ecology, Environmental Protection and Climate Change of Uzbekistan and its regional branches.
- **Ecology Teacher / Lecturer** in higher education institutions, secondary special colleges, and vocational schools.
- **Specialist in State Nature Reserves, National Parks, and Protected Areas** under the Forestry and Environmental Management agencies.
- **Ecological Analyst / Laboratory Specialist** in industrial pollution control, chemical testing, and environmental monitoring laboratories.
- **EIA Specialist / Environmental Auditor** in private consulting firms, construction enterprises, and industrial manufacturing plants.
- **Specialist or Project Coordinator** in international environmental organizations (UN administrative bodies, UNDP, WWF, GIZ, USAID) operating in Uzbekistan.
- **Water Resource Specialist** within agencies operating under the Ministry of Water Resources and Agricultural bodies.

- **Independent Environmental Consultant** offering advisory and auditing services in ecological sustainability and green building.

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 Ecology

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

1. Knowledge

- **1.1.** Demonstrate advanced knowledge of theoretical and applied ecology, ecosystem dynamics, biodiversity conservation, and modern environmental technologies.
- **1.2.** Understand state laws, international conventions, national strategies, and legal frameworks governing environmental protection and climate action in Uzbekistan.
- **1.3.** Explain the principles of environmental toxicology, industrial pollution prevention, bio-monitoring, and soil/water restoration methods.
- **1.4.** Demonstrate knowledge of modern research methodologies, field sampling techniques, data modeling, and mathematical analysis in ecology.
- **1.5.** Recognize the socio-economic and ethical impacts of climate change, resource depletion, and industrialization on human populations and natural habitats.

2. Skills

- **2.1.** Design and execute complex field surveys, environmental impact assessments (EIA), and bio-monitoring studies.
- **2.2.** Apply GIS (Geographic Information Systems), spatial analysis, and remote sensing tools to analyze ecological changes and ecosystem mapping.
- **2.3.** Use scientific equipment, laboratory analytical instruments, and bio-testing methodologies to measure water, air, and soil pollution levels.
- **2.4.** Develop strategies for natural resource management, ecological restoration, biodiversity protection, and waste recycling.
- **2.5.** Prepare scientific reports, ecological audit documentation, project proposals, and peer-reviewed research papers.

- **2.6.** Effectively communicate research outcomes and environmental issues to policy-makers, industry professionals, and the public in national and foreign languages.

3. Competences

- **3.1. Ecological & Research Competence** – Conduct independent scientific research and apply advanced ecological methods to solve local, regional, and global environmental problems.
- **3.2. Environmental Management Competence** – Lead environmental audit procedures, review ecological projects, and manage green strategy initiatives in government and private entities.
- **3.3. Methodological & Educational Competence** – Teach ecological subjects at academic institutions, designing up-to-date curricula and laboratory activities.
- **3.4. Leadership & Project Management Competence** – Organize, execute, and direct multi-disciplinary environmental projects and inter-agency ecological campaigns.
- **3.5. Ethical & Sustainable Civic Competence** – Advocate for environmental justice, sustainability, biosecurity, and ethical responsibility towards the biosphere.
- **3.6. Lifelong Learning Competence** – Continuously upgrade technical, analytical, and field qualifications through ongoing scientific research, international seminars, and self-education.