NAVOI STATE UNIVERSITY

ENVIRONMENTAL HAZARDS

Master's Programme: 70520202 – Ecology | Academic Year 2026–2027

1. Course Information

Item	Details
Course title	Environmental Hazards
Course code	EKXA
Academic year / semester	2026–2027 / Semester 2
Programme / curriculum reference	70520202 – Ecology / 70520202–1.06
Course type / language	Compulsory / Uzbek
Credits	6 ECTS
Total workload	180 hours
Contact hours	90 hours: 44 lecture hours and 46 practical hours
Independent study	90 hours
Laboratory sessions / course project	Not specified / Not specified
Weekly class hours	6
Aligned UN SDGs:	SDG 13 — Climate Action SDG 12 — Responsible Consumption and Production SDG 15 — Life on Land SDG 6 — Clean Water and Sanitation



2. Course Description

The course introduces the theoretical foundations and key concepts of environmental hazards, the impacts of human activities on nature, and the causes and consequences of contemporary technological and global environmental crises. It addresses environmental safety, sustainable development, natural and anthropogenic hazards, industrial and chemical risks, pollution, climate change, ecological accidents, risk assessment and management, environmental legislation, and approaches to protecting the natural environment.

3. Aim and Objectives

Aim: To develop students' understanding of the theoretical foundations, core concepts and regularities of environmental hazards; the current state of human impacts on nature; the causes of scientific and technological change-related and global environmental crises; and principles of environmental protection.

Objectives include enabling students to:

- understand different types of environmental hazards, contemporary environmental crises and their local consequences;
- analyse climate change, potential environmental hazards and the environmental effects of industrial and technological activities;
- develop scientific knowledge and practical skills related to environmental problems and their theoretical foundations;
- understand environmental protection legislation and approaches to preventing or reducing environmental risks.

4. Prerequisites

- Fundamentals of Sustainable Development (BRA1406)
- Contemporary Environmental Problems (HZEM1304)
- Fundamentals of Ecology (EKA1206)
- Urban and Industrial Ecology (SSE13412)

5. Learning Outcomes

Upon successful completion of the course, students are expected to be able to:

- explain the theoretical foundations of environmental hazards and the role of national energy sources and resource conservation;
- analyse environmental hazards in urban and industrial areas and discuss approaches to protecting nature and biodiversity;
- interpret contemporary environmental risks and evaluate the significance of environmental indicators;
- apply theoretical knowledge to the analysis of environmental processes and related data;
- explain relationships between living organisms and their environment and apply ecological principles in relevant practical contexts;
- apply environmental knowledge in professional practice, production and other relevant fields.

6. Course Workload

Learning activity	**Hours**
Lectures	44
Practical classes	46
Laboratory classes	Not specified

Independent study	90
Total	180

7. Independent Study Tasks

Task	Hours
Assess the impact of climate change on local ecosystems	20
Conduct a comprehensive assessment of environmental risks at an industrial facility	20
Analyse transboundary water resources	20
Study the consequences of technological disasters	15
Identify ways to reduce environmental and economic damage	15
Total	90

8. Teaching and Learning Methods

- Lectures
- Practical exercises and preparation of conclusions
- Case studies
- Group work and teamwork
- Brainstorming
- Student presentations

9. Assessment and Credit Requirements

To obtain course credits, students are required to master the theoretical and methodological concepts of the subject, present analytical results accurately, demonstrate independent thinking about the processes studied, complete assigned tasks and submit the final written assessment.

The source syllabus describes qualitative performance levels corresponding to grades 5, 4, 3 and 2. It does not specify numerical score ranges or a weighted breakdown of assessment components.

10. Core and Supplementary Literature

Core literature:

1. Boyirov, Z.R. (2024). Fundamentals of Environmental Management. Textbook. Ministry of Higher Education, Science and Innovation of the Republic of Uzbekistan; Karshi Engineering-Economics Institute. 366 pp.
2. Boyirov, Z.R., & Kilicheva, D.I. (2024). Engineering Ecology. Study guide. Ministry of Higher Education, Science and Innovation of the Republic of Uzbekistan; Karshi Engineering-Economics Institute. 404 pp.

Supplementary literature:

3. Kolesnikova, E.V. (2020). Technogenic Systems and Environmental Risk: Teaching and Methodological Guide. St Petersburg: Russian State Hydrometeorological University. 124 pp.
4. Buriyev, S.S., Maxkamova, D.A., & Sherimbetov, V.X. (2020). Ecology and Environmental Protection. Tashkent.
5. Community and Global Ecology of Deserts. Edited by Levente Hufnagel.
6. Rusak, O.N. (2016). Technogenic Hazards and Risks. St Petersburg State Forest Technical University.
7. Salimov, X.V. (2015). Ecology. Study guide. Konchi Texproekt, Navoi.

Information resources: ecology.ru; ecolog.com; environ.com.

11. Relevant Sustainable Development Goals (SDGs)

The following SDGs are aligned with the themes and learning activities described in the course syllabus. This mapping indicates curricular relevance and does not represent a measurement of institutional SDG performance.

SDG	Relevant targets	Course relevance
SDG 3 – Good Health and Well-being	3.9	Environmental pollution, toxic hazards and the effects of environmental conditions on human health.
SDG 6 – Clean Water and Sanitation	6.3, 6.5	Water pollution, water scarcity, transboundary water resources and local water-quality assessment.
SDG 7 – Affordable and Clean Energy	7.2, 7.3	Resource conservation, national energy sources and the environmental impacts of technological activity.
SDG 9 – Industry, Innovation and Infrastructure	9.4	Industrial hazards, technological systems, industrial safety and risk reduction.
SDG 11 – Sustainable Cities and Communities	11.5, 11.6	Urbanisation-related hazards, environmental risks in regions, air pollution and disaster impacts.
SDG 12 – Responsible Consumption and Production	12.4, 12.5	Hazardous substances, waste sorting, pollution prevention and reduction of environmental damage.
SDG 13 – Climate Action	13.1, 13.2	Climate change, global warming, drought, desertification and climate-related environmental risks.
SDG 14 – Life Below Water	14.1	Water pollution and protection of aquatic environments.
SDG 15 – Life on Land	15.1, 15.3, 15.5	Ecosystem condition, soil

		degradation, desertification and biodiversity loss.
SDG 16 – Peace, Justice and Strong Institutions	16.3, 16.6	Environmental protection legislation, regulation and public responsibilities for environmental safety.
SDG 17 – Partnerships for the Goals	17.16	International cooperation to prevent and address environmental hazards.

12. Course Compilation and Review

Role	**Name / details**
Compiler	N. Xasanov, PhD, Lecturer, Biology Department, Navoi State University
Reviewer	T.S. Kanatbayeva, PhD, Associate Professor, Biology Department, Navoi State University
Reviewer	L. Xasanova, Associate Professor, Navoi Innovation University
Approval	Approved by the Council of the Faculty of Natural Sciences and Medicine, meeting No. 11, 30 June 2026
Submitting department	Biology Department, meeting No. 11, 30 June 2026