



## Syllabus Course Program



# Environmental Principles of Country Sustainable Development

### Specialty

101 – Ecology

### Institute

Institute of Education and Science in Mechanical Engineering and Transport

### Educational program

Engineering ecology

### Department

Chemical Engineering and Environment Protection (154)

### Level of education

Master's level

### Course type

Special (professional), Mandatory

### Semester

1

### Language of instruction

English, Ukrainian

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## Lecturers and course developers



### Tetiana Tykhomyrova

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Candidate of Technical Sciences, Associated Professor

Work experience - 14 years. Author and co-author of more than 50 scientific and educational works. English and Ukrainian free speaking and writing . Leading lecturer in the disciplines: "Sustainable development" and "Grant writing and international cooperation in ecology" (in English), "Hydrology", "Soil science"

[More about the lecturer on the department's website](#)

## General information

### Summary

The discipline is aimed at studying the sustainable development concept and its implementation in all spheres of life, as well as English level improving

### Course objectives and goals

The students holistic view formation on society development from the ecological imperative standpoint, taking into account the economic aspect, acquiring knowledge of the countries sustainable development base, the implementation features of sustainable development existing models, deepening knowledge in special English terminology.

### Format of classes

Lectures, practical work, report, consultations. Final control - credit.

### Competencies

GC-1. The ability to learn and master modern knowledge.

GC-5. Competence to communicate in a foreign language.

SC-1. Awareness of the latest achievements necessary for research and/or innovation in the field of ecology, environmental protection, and sustainable use of natural resources.

SC-2. Ability to apply interdisciplinary approaches in critically analyzing ecological problems.  
SC-5. Ability to present knowledge and personal conclusions to both experts and non-experts.  
SC-8. Ability for self-education and professional development based on innovative approaches in the field of ecology, environmental protection, and balanced nature management..  
SC-10. Ability to assess the level of negative impact of natural and anthropogenic factors of ecological danger on the environment and human

### **Learning outcomes**

RE-1. Know and understand the fundamental and applied aspects of environmental sciences.  
RE-3. Know the basic concepts of natural science, sustainable development, and scientific methodology at the level of the latest achievements.  
RE-7. Be able to communicate in a foreign language in scientific, production, and socio-economic spheres of activity.  
RE-12. Be able to evaluate landscape and biological diversity and analyze the consequences of anthropogenic impact on natural environments.  
RE-16. Choose the optimal management and/or nature use strategy depending on environmental conditions.  
RE-17. Critically analyze theories, principles, methods, and concepts from different subject areas to solve practical problems and ecological issues

### **Student workload**

The total volume of the course is 120 hours (4 ECTS credits): lectures - 32 hours, laboratory classes - 32 hours, self-study- 72 hours.

### **Course prerequisites**

To successfully pass the course, it is necessary to possess the competencies and learning outcomes provided by the standard of higher education in the specialty 101 "Ecology" of the first bachelor's level, as well as general knowledge of natural sciences and minimum B1 English level

### **Features of the course, teaching and learning methods, and technologies**

Lectures are conducted interactively using multimedia technologies. The practical classes use reproductive and problem-solving learning methods and focus on solving the urgent problems of sustainable development concept implementation into the enterprises everyday production practice and people's lives.

## **Program of the course**

### **Topics of the lectures**

#### **Topic 1. The origin of sustainable development concept.**

History of sustainable development concept development and formation . Basic terms of sustainable development concept and their translation. The role of the UN in sustainable development concept formation.

#### **Topic 2. Sustainable development goals #1-5.**

Background of sustainable development goals #1-5. Sustainable development goals #1-5. Indicators of sustainable development goals #1-5.

#### **Topic 3. Sustainable development goals #6-11.**

Background of sustainable development goals #6-11. Sustainable development goals #6-11. Indicators of sustainable development goals #6-11.

#### **Topic 4. Sustainable development goals #12-17.**

Background of sustainable development goals #12-17. Sustainable development goals #12-17. Indicators of sustainable development goals #12-17.

#### **Topic 5. Circular economy and its importance for sustainable development concept.**

Concept of circular economy. Legislation of Ukraine in the sphere of circular economy. The main problems of sustainable development concept implementing in Ukraine.

#### **Topic 6. Sustainable development and the poor people.**

Ukrainian and global approach to determining the poverty line. Environmental consequences of the poor population increase. Sustainable development goals as a tool for poverty alleviation.

#### Topic 7. The main sustainable development tasks for Ukraine.

National report "Sustainable Development Goals: Ukraine". Achieving sustainable development goals for Ukraine by 2030.

#### Topic 8. Sustainable development and post-war reconstruction of Ukraine.

A full-scale invasion impact on sustainable development concept implementation in Ukraine. New priorities in achieving the sustainable development goals. Ukraine post-war reconstruction state program correspondence to sustainable development concept, the sustainable development goals and Ukraine's international obligations in this area.

### Topics of the workshops

Topic 1. Globalization as a phenomenon and its impact on the environment.

Topic 2. The role of UN institutions in collecting data for indicators of achieving the sustainable development goals.

Topic 3. The impact of achieving sustainable development goals 1-17 on each other, their relationship.

Topic 4. Analysis of the Prozorro public procurement system taking into account implementing the requirements of the circular economy and the sustainable development concept.

Topic 5. Waste management analysis taking into account sustainable development concept and international obligations of Ukraine.

Topic 6. The environmental component of each sustainable development goal.

Topic 7. Analysis of individual initiatives and state programs of Ukraine post-war reconstruction in accordance with the sustainable development concept.

### Topics of the laboratory classes

Laboratory classes is not provided in this course.

### Self-study

The course involves the completion of an individual task in the form of an report with a presentation and it's public defense.

## Course materials and recommended reading

### Compulsory

1. Sustainable development/ Tutorial for students of specialty 101 "Ecology", 183 "Techniques and technologies of environmental protection" all studding's forms / T. Tykhomyrova, V. Sebko, V. Babenko. – kharkiv, 2022. – <https://repository.kpi.kharkov.ua/handle/KhPI-Press/63071>

2. European Stability Mechanism. – URL : <https://www.esm.europa.eu>.

3. Sustainable development of territories: challenges and opportunities: monograph / Bobrovska O. Yu., Krushelnytska T. A, Prokopenko L. L. [etc.]; ed. by O. Yu. Bobrovska. – Published by International Center for Research, Education and Training. MTÜ. Tallinn, Estonia, 2021. – 234 p.

<http://surl.li/pgslo>

### Recommended

1. ICAT (Initiative for Climate Action Transparency) (2020). Sustainable Development Methodology: Assessing the Environmental, Social and Economic Impacts of Policies and Actions, D. Rich, R. Song and K.H. Olsen eds. Washington D.C.: World Resources Institute; Copenhagen: UNEP DTU Partnership.

<https://ghgprotocol.org/sites/default/files/2022-12/Sustainable-Development-Assessment-Guide-1.pdf>

2. Taglioni, C., Moncayo, J.R. & Fabi, C. 2023. Food loss estimation: SDG 12.3.1a data and modelling approach. FAO Statistics Working Paper Series, No. 23-39. Rome, FAO.

<https://www.fao.org/documents/card/en/c/cc9173en>

3. FAO and UN Water. 2021. Progress on the level of water stress: Global status and acceleration needs for SDG indicator 6.4.2, 2021. Rome

<https://www.fao.org/documents/card/en/c/cb6241en>

4. FAO. 2021. Guidance on core indicators for agrifood systems – Measuring the private sector’s contribution to the Sustainable Development Goals. Rome.

<https://www.fao.org/documents/card/en/c/cb6526en>

## Assessment and grading

### Criteria for assessment of student performance, and the final score structure

100% of the final grade is based on the results of the current assessment. Assessment: practical works 20%, essay 20%, two control works 30% each.

### Grading scale

Total points	National	ECTS
90–100	Excellent	A
82–89	Good	B
75–81	Good	C
64–74	Satisfactory	D
60–63	Satisfactory	E
35–59	Unsatisfactory (requires additional learning)	FX
1–34	Unsatisfactory (requires repetition of the course)	F

## Norms of academic integrity and course policy

The student must adhere to the Code of Ethics of Academic Relations and Integrity of NTU "KhPI": to demonstrate discipline, good manners, kindness, honesty, and responsibility. Conflict situations should be openly discussed in academic groups with a lecturer, and if it is impossible to resolve the conflict, they should be brought to the attention of the Institute's management.

Regulatory and legal documents related to the implementation of the principles of academic integrity at NTU "KhPI" are available on the website: <http://blogs.kpi.kharkov.ua/v2/nv/akademichna-dobrochesnist/>

## Approval

Approved by

2023/08/31



Head of the department  
Oleksii SHESTOPALOV

2023/08/31



Guarantor of the educational program  
Musii TSEITLIN