

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
ХАРКІВСЬКИЙ НАЦІОНАЛЬНИЙ ЕКОНОМІЧНИЙ УНІВЕРСИТЕТ
ІМЕНІ СЕМЕНА КУЗНЕЦЯ

"ЗАТВЕРДЖУЮ"

Заступник керівника
(профектор з науково-педагогічної роботи)



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ЕКОЛОГІЯ

робоча програма навчальної дисципліни

Галузь знань	усі
Спеціальність	усі
Освітній рівень	перший (бакалаврський)
Освітня програма	усі

Вид дисципліни
Мова викладання, навчання та оцінювання

**вибіркова
англійська**

Завідувач кафедри природоохоронних технологій,
екології та безпеки життєдіяльності

Ю.В. Буц

Харків
ХНЕУ ім. С. Кузнеця
2018

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
SIMON KUZNETS KHARKIV NATIONAL UNIVERSITY OF ECONOMICS

ECOLOGY


Program of academic discipline

Field of knowledge	all	
Specialty	all	
Educational level	first (bachelor)	
Educational program	all	
Type of discipline		selective
Language of teaching, training and evaluation		english

Approved at the department meeting of environmental technologies, ecology and safety of vital activity
Minutes № 2, August 30, 2018.

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**Page of renewal and re-approval
of the academic discipline work program**

Academic year	Date of department meeting of work program creator	Meeting number	The signature of the department head
2019/2020	21.08.2019	№ 1	

Introduction

Discipline annotation: At the turn of the second and third millennia of human existence environment and its components is becoming increasingly important for economic development, health, durability and quality of life. Further sustainable development is only possible on condition that rationalization of nature conservation and effective mechanisms to optimize the interaction between society and the environment. Of particular importance is the activation of applying economic methods to prevent and eliminate pollution and damage to the environment.

Nowadays, the environment is for all mankind not only science, but also a means of thinking, behavior, real action, to some extent even worldview. No exaggeration to say that the environment has become one of the sides of humanism, including a spirituality, understanding of the unity of man and nature, high culture, intelligence.

The purpose of discipline is to develop students' competencies on issues of modern ecology, understanding the mechanism of influence of human activity on the environment, analysis of the main sources of impact on the environment and the primary requirements for storage, lay the foundations of future specialists in environmental culture..

Level	1	
Semester	2	
Number of ECTS credits	5	
Audit lessons	lectures	30 h.
	practical works	30 h.
Independent work		90 h.
Form of final control	credit	

Structural-logical scheme of studying the discipline:

Previous disciplines	Following disciplines
Basic knowledge of secondary education	Microeconomics
	Macroeconomics
	Political Economy
	Regional economy
	Sociology

1. Competence and results of studying discipline:

2. Competence	Results of studying
Ability to reasonable comparison of the environmental and economic priorities in the economy	Understanding the importance of environmental awareness and the need for practical activity in the economy
Ability to evaluate the advantages and disadvantages of considering certain environmental requirements	Understanding the importance of the environment for economic activity of the person

Ability to reasoned analysis of the impact of environmental and ecological problems in certain activities	Understanding the role and impact of human activity on the state of the biosphere and the reverse process
The ability to analyze compliance with environmental standards of practice	Definition of environmental standards and requirements to human activities
Ability to prioritize environmental requirements to the profession	Awareness of the need of environmental management
The ability to receive, analyse and evaluate the environmental monitoring data and use them for some practice	The definition of legal principles and methods to obtain and use environmental information
Evaluate the performance of the enterprise in the field of environmental protection and environmental management	The ability to assess and analyse the effectiveness of environmental measures and the efficient use of natural resources
Conduct analysis of environmental hazardous situations, to determine the degree of risk and develop measures to prevent them	The ability to assess the environmental safety of certain professional activities
Understanding the mechanisms of mutual planetary environment, the global economy and world politics	Understanding the basic principles and goals of international cooperation in the field of ecology

2. The discipline program

Module 1. Ecosystem level of organization of matter and the anthropogenic impact on the environment

Theme 1. The method, heart of the problem and ecology problems

- 1.1 Ecology as a science, its structure and role in society today. The concept of ecology, its subject, object and purpose.
- 1.2 Historical development of relations between man and nature.
- 1.3 The main problem of ecology.

Theme 2. Ecosystem level of organization of matter

- 2.1. *The natural environment and ecological factors.*
The concept of the environment. Definition and types of environment.
Environmental factors: concept and classification. General laws and their effect on living organisms. Limiting factors.
- 2.2. *Populations.*
The concept of population. Statistical and dynamic factors of populations. Dynamics of population size.
- 2.3. *Ecosystems.*

The concept of ecosystems, ecosystem classification. Energy and principles of functioning ecosystems. Acceptable performance and stability of ecosystems. Development of ecosystems: succession.

The concept of environmental components. The main environmental components of ecosystems: the energy, the atmosphere, water, soil, information, biota. Description of each of these environmental components. Environmental Pyramid.

Homeostasis. Homeostasis as the equilibrium of natural systems. Food Chain and its variants. Food Network.

2.4. The laws of ecology.

The main environmental laws. Meaning laws Vernadsky, Komoner and Chyras for environmental management.

Theme 3. The biosphere is global ecosystem of Earth. Global environmental problems.

3.1. Biosphere.

The terms "biosphere" and "living matter." Vernadsky doctrine of the biosphere and the noosphere. The limits of the biosphere. Biosphere as one of the layers of the Earth. The atmosphere, lithosphere, hydrosphere as part of the biosphere.

3.2. General properties of the biosphere.

Circulation of matter and energy in the biosphere. Place of ecosystems in the organization of the biosphere. Biogenic chemical elements. Biogeochemical cycles.

Small biological cycle and large geological one of matter. Water cycle, nitrogen, carbon dioxide and sulphur cycle, phosphorus, carbon as the most vital substances biosphere.

Dynamics and evolution of the biosphere.

3.3. Global environmental problems.

Global environmental problems. The demographic problem. Contamination of the environment. The problem of modern climate change. United Nations Framework Convention on Climate Change. Depletion of the ozone layer in the stratosphere. Tropospheric ozone. Acidification of the environment. Acid rains. The problem of attitude and waste production. The problems of radioactive pollution.

Theme 4. The anthropogenic impact on the environment

4.1. Contamination of the environment.

Sources, types and extent of pollution. The behavior of pollutants in the environment. The most common pollutants. The phenomenon of synergy. The global nature of the impact of anthropogenic pollution on the biosphere and individual ecosystems.

Types of pollution and its impact on man and his activities.

Pollution of the atmosphere, hydrosphere and soils.

4.2. The influence of different branches of industry on the environment.

Mining. Chemical, petrochemical and refining industry. Ferrous and nonferrous metallurgy. Fuel and energy complex. Agriculture. Housing. Transport track facilities. Contamination of the environment objects.

Module 2. Environmental protection and environmental management

Theme 5. Economic mechanisms of environmental protection and environmental management

5.1. Natural resources.

Classification of natural resources. International natural resources. Resource loop circuit as anthropogenic substances. The principles of environmental management. Modern environmental requirements for the human activity.

5.2. Environmental management.

The concept of low- and non-waste technology. Classification of waste. Problems of waste management in various areas of human activity.

Basic principles of non-waste technology. Waste consumption.

5.3. Methods of environmental management.

The economic mechanism of environmental protection. Ecological and economic factors of evaluation of production processes. The effectiveness of measures to protect the operating system. Methodological approaches to determining the economic and social damage from pollution OS. Economic stimulation for environmental protection activities of subjects of enterprise activity.

Reconciliation and issuing licenses for nature management. Environmental funds. Environmental insurance.

Theme 6. Environmental monitoring of the environment. Quality control of the environment in Ukraine

6.1. Control and quality management of environment.

The concept of the effect of summation. Criteria for assessing the quality of the environment. Quality standard of environment.

6.2. Environmental monitoring.

The concept of ecological monitoring and its objectives. Classification of monitoring. Formation of databases for environmental monitoring. Complex monitoring of the biosphere. Providing monitoring.

Impact assessment of industrial facility on the environment. Environmental impact assessment of objects. Control of industrial emissions and other household objects.

6.3. Legislation in environmental protection.

The legal basis for the protection of air, water bodies, mineral resources. Legislation in protected activity.

Environmental Law. Concept, subject and sources of environmental law. Environmental offense. The legal regime of nature management and the OS protection. Types of liability for environmental offenses.

Theme 7. Environmental Management and Marketing

7.1. Environmental Management.

The concept, object and functions of environmental management. The mechanism formation of nature management in a market economy. Valuation biotic component of ecosystems.

Environmental management at enterprises.

7.2. Ecological marketing.

The essence, aims, methods and objects of environmental marketing.

7.3. Environmental audit.

Tasks, procedures, effectiveness of environmental audit.

Theme 8. Environmental safety and environmental risks

8.1. Ecological safety.

Basic concepts of environmental safety. The components of environmental safety. Types, sources and consequences of environmental hazards. The environmental crisis, ecological situation. Anthropogenic factors of adverse environmental situations. Environmental emergency. Regulation of environmental situations.

8.2. The environmental risk.

The concept of environmental risk. The danger and safety. "Acceptable" risk. Evaluation and principles of risk management.

Theme 9. World environmental policy. International integration of environment

9.1. International cooperation in the field of ecology.

"Programme of Action" of the UN Conference on Environment and Development in Rio de Janeiro in 1992. Kyoto Protocol on reducing greenhouse gas emissions. Stockholm Convention of organic contaminants. The Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol reduction of ozone decomposing substances.

9.2. *International environmental law.*

3. The order of evaluation of learning results

The system of assessment of the developed competencies of students takes into account the types of occupations, which according to the curriculum program include lectures, practical classes, and independent work. Assessment of the developed competencies in students is carried out using a 100-point accumulation system. In accordance with the Provisional Regulations "On the Procedure for Assessing the Results of Students' Learning Based on the Accumulated Bulletin-Rating System" Kuznets KhNUE, control measures include:

current control carried out during the semester during lectures, practical classes, seminars and evaluated by the sum of the points scored (the maximum amount is 100 points; the minimum amount that allows the student to get a score is 60 points);

modular control, which is conducted taking into account the current control over the content module and aims to integrate the evaluation of the student's learning outcomes after studying the material from the logically completed part of the discipline - the content module;

Current control of this discipline is carried out in the following forms:

- active work at lecture classes;
- active participation in the implementation of practical tasks;
- active participation in discussion and presentation of material at seminars;
- preparing an essay on a given topic;
- conducting ongoing control works..

Modular control of this discipline is carried out in writing for the corresponding tasks, the content of which contains questions of all the topics of the module. Knowledge control is carried out in the form of testing. Test questions are formed on topics covered during lecture and practical and seminar sessions, as well as materials that the student has to work on their own.

The procedure for carrying out the current assessment of students' knowledge. The student's knowledge of the current control is carried out in order to test the level of student's readiness to perform a certain work. The objects of current control are:

effectiveness, activity, systematic work of the student during the semester, as well as attending classes;

- implementation of practical tasks;
- performance of tasks for independent processing;
- level of performance of modular tasks.

Assessment of the student's work during the semester is carried out according to the following criteria:

the degree of understanding and mastering the theoretical material and issues under consideration;

degree of mastering actual material on ecology, environmental problems of different regions and countries, analysis of the state of the environment;

familiarization with the recommended and modern literature on the issues under consideration;

ability to apply the obtained theoretical knowledge for solving practical problems, analysis of specific ecological situations both made on independent study, and those that are considered in the audience;

logical and analytical presentation of the material in written works and audience statements, the argumentation of their position, the ability to summarize information and formulate conclusions on its basis.

The student's assessment of the student's knowledge is carried out taking into account the compliance of the completed task with the student's response to all five specified criteria. The absence of one of the criteria reduces the score to a certain number of points.

When evaluating practical tasks, the main criteria are the quality, timeliness and validity of the task. In case of insufficient performance of tasks (according to the given criteria), the teacher has the right to lower the grade for work.

Current test control is carried out a few times per semester. The test includes multiple choice questions for checking the knowledge of the main categories of the discipline.

A student can get a maximum of 15 points for a correctly completed test task.

Criteria for evaluating non-auditory independent work of students. The general criteria for assessing the extra-admission autonomous work of students are: the depth and strength of knowledge, the level of thinking, the ability to systematize knowledge on specific topics, the ability to make sound conclusions, the possession of categorical apparatus, skills and techniques of practical tasks, the ability to find the necessary information, carry out its processing, self-realization in practical classes.

Essay evaluation criteria are: the ability to conduct a critical and independent assessment of certain problem issues; the application of analytical approaches; the ability to explain alternative views and the presence of their own point of view, position on a particular problem issue; logic, structuring and substantiation of conclusions about the problem; quality and clarity of reasoning; independence of the work; using of comparison methods, generalizations of concepts and phenomena; literacy of the work presentation.

Points distribution on weeks

Module themes			Lecture	Practical works	Seminars	Tasks on the topics	Checking homework	Test task	Total
Module 1.	Theme 1	1 week	0,5	0,5		3	1		5
	Theme 2	2 week	0,5		0,5	3	1		5
		3 week	0,5	0,5		3	1		5
	Theme 3	4 week	0,5		0,5	3	1		5
		5 week	0,5	0,5		3	1		5
	Theme 4	6 week	0,5		0,5	3	1		5
		7 week	0,5	0,5		3	1	15	20
Module 2.	Theme 5	8 week	0,5		0,5	3	1		5
		9 week	0,5	0,5		3	1		5

	Theme 6	10 week	0,5		0,5	3	1		5
		11 week	0,5	0,5		3	1		5
	Theme 7	12 week	0,5		0,5	3	1		5
	Theme 8	13 week	0,5	0,5		3	1		5
		14 week	0,5		0,5	3	1		5
	Theme 9	15 week						15	15
Total			7	3,5	3,5	42	14	30	100

The evaluation scale: national and ECTS

The amount of points for all types of learning activities	ECTS mark	National mark	
		for exam, course project (work), practice	for credit
90 – 100	A	excellent	accepted
82 – 89	B	good	
74 – 81	C		
64 – 73	D	satisfactory	
60 – 63	E		
35 – 59	FX	unsatisfactory	unaccepted
1 – 34	F		

4. Recommended literature

Base literature

1. Амоша О. І. Людина та навколишнє середовище: економічні проблеми екологічної безпеки виробництва / О. І. Амоша. – Київ : Наукова думка, 2002. – 305 с. – ISBN 966-00-0035-9.

2. Білявський Г. О. Основи екології: теорія та практикум : навч. посіб. для вищ. навч. закл. / Г. О. Білявський, Л. І. Бутченко. – Київ : Лібра, 2004. – 367 с. – ISBN 966-7035-42-5.

3. Екологічний менеджмент : навч. посіб. для вищ. навч. закл. / за ред. В. Ф. Семенова, О. Л. Михайлюк. – Київ : Центр навчальної літератури, 2004. – 407 с. – ISBN 966-8365-15-1.

4. Коваленко Г. Д. Основи екології : навч. посіб. / Г. Д. Коваленко, Г. С. Попенко. – Харків : ХНЕУ, 2006. – 227 с. – ISBN 966-676-179-3.

Additional literature

7. Акимова Т. А. Экология : человек, экономика, биота, среда : ученик / Т. А. Акимова, В. В. Хаскин. – Москва : ЮНИТИ-ДАНА, 2002. – 566 с. – ISBN 5-238-00190-8.

8. Арустамов Э. А. Экологические основы природопользования : учеб. Пособие / Э. А. Арустамов. – Москва : Дашков и К, 2002. – 236 с. – ISBN 5-8316-0054-8.

9. Богобоящий В. В. Принципи моделювання та прогнозування в екології : підруч. для вищ. навч. закл. / В. В. Богобоящий, К. Р. Курбанов, П. Б. Палій, В. М. Шмандій. – Київ : Центр навчальної літератури, 2004. – 215 с. – ISBN 966-8365-04-6.