

**MINISTRY OF HIGHER EDUCATION, SCIENCE AND INNOVATIONS OF
THE REPUBLIC OF UZBEKISTAN
TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES NAMED
AFTER MUHAMMAD AL-KHWRAZMIY**

**SYLLABUS
In the subject “ECOLOGY”
for all full-time bachelor's degree programs**

Area of expertise::	600 000	Information and communication technologies
	700 000	Engineering, manufacturing and construction sectors
The field of education:	610 000	Information and communication technologies
	7100000	Engineering
Academic programs	60610500	Computer engineering ("Computer engineering", "IT service", "Multimedia technologies")
	60611200	Economics and management in the field of information and communication technologies
	60611400	Software engineering
	60711500	Mechatronics and Robotics
	60610700	Artificial intelligence
	60611100	Television technologies ("Audiovisual technologies", "TV studio systems and applications")
	60612100	Cybersecurity engineering

Tashkent - 2024

Item name:	Ecology
Item Type:	Major/Optionally
Item code:	OEL
Well:	3
Semester:	5,6
Form of study:	full-time
Form of study and semester hours	120 academic hours
Lectures	30 academic hours
Practical lessons	30 academic hours
Independent education	60 academic hours
Amount of credits:	4
Evaluation Form	Final exam / Test
Teaching language:	English

Course Plan (CP)	
CP1	<p>The main goal of environmental education is the formation of a conscious attitude to environmental problems among all segments of the population, including students of higher educational institutions.</p> <p>The course "Ecology", taught in universities, should serve to form the scientific worldview of students and direct them to practical activities.</p> <p>Requirements for knowledge, skills and abilities of students in teaching this subject:</p> <ul style="list-style-type: none"> - It is necessary to know the science of ecology and its tasks, the causes of environmental problems, environmental factors and their impact on organisms, ecosystems and the conditions for their sustainability, the current state of the natural environment and emerging environmental problems, the impact of scientific and technological progress on the environment: - based on our national beliefs and values, to have the skills of reasonable, economical use of land, water, air and natural resources, any damage to nature can have extremely dangerous consequences for human life.

Course Prerequisites	
1.	There are no prerequisites for the course

Learning Outcomes (LO)	
LO1	the ability to be responsible for the results of their professional activities in the context of the environmental situation.
LO2	can think about the harmful effects of radiation on the human body and the environment.
LO3	readiness to ensure the protection of the environment, life and health of people.
LO4	are able to distinguish between methods and means of protecting a person from emergency situations.
LO5	get an idea about the main directions of the environmental legislation of the Republic of Uzbekistan, nature protection.
LO6	ability to use modern management methods to solve environmental problems;
LO7	provide first aid until emergency medical care is received. Learns to perform artificial respiration and chest compressions.

LO8	develop measures to ensure the cleanliness and safety of production processes
LO9	the ability to use the basics of methods of protection against the possible consequences of environmental accidents and disasters.
LO10	ability to carry out an environmental audit.
LO11	ability to make decisions and evaluate their consequences with point of view of environmental impact.
LO12	as a result of teaching the subject, the student will be able to determine the conditions that meet the requirements for the safety of the ecological situation, and make the necessary calculations.

Lecture contents		Hours
Topic 1.	Ecology course, goal, task, structure and history	2
Topic 2.	The doctrine of the biosphere	2
Topic 3.	Ecology of ecosystems	2
Topic 4.	Environmental factors and their classification	2
Topic 5.	Atmosphere and its protection.	2
Topic 6.	Protection of water resources	2
Topic 7.	Preservation of the lithosphere	2
Topic 8.	Natural resources and their rational use	2
Topic 9.	Pollution of the environment with various wastes	2
Topic 10.	Problems of environmental protection in the Republic of Uzbekistan.	2
Topic 11.	Pollution of industrial cities and their impact on the environment	2
Topic 12.	Negative impact of the Aral Sea tragedy on the environment.	2
Topic 13.	Universal environmental problems. Regional environmental problems.	2
Topic 14.	The main directions of environmental safety. Environmental assessment.	2
Topic 15.	The sphere of communication and its impact on the environment. Environmental monitoring.	2
Total:		30
Practical lesson contents		Hours
Topic 1.	General environmental problems.	2
Topic 2.	Regional environmental problems and their interpretation.	2
Topic 3.	Global environmental problems	2
Topic 4.	Influence of electromagnetic fields on natural ecosystems. Calculation of the frequencies of the electromagnetic field used in the production environment.	2
Topic 5.	Natural resources. Calculation of generated emissions.	2
Topic 6.	My housing.	2
Topic 7.	Determination of the sanitary protection zone of industrial enterprises, taking into account the direction of the wind.	2
Topic 8.	Assessment of the level of harmful emissions into the atmosphere.	2
Topic 9.	Calculation of emissions from industrial enterprises into water basins.	2
Topic 10.	Regulation of soil pollution.	2
Topic 11.	The environmental protection mechanism is the calculation of air pollution charges.	2
Topic 12.	Assess the efficiency of industrial waste management. «Engineering protection of the biosphere.	2
Topic 13.	Environmental impact assessment. Determination of the demographic potential of construction sites.	2
Topic 14.	Determining the amount of harmful gases emitted by cars.	2

Topic 15.	Your knowledge about the types of power sources.	2
	Total	30

Independent education contents		Hours
Task 1	Preparing for practical exercises and completing homework	30
Task 2	Creation of situational tasks	10
Task 3	3. Translation of specified sources	10
Task 4	4. Write esse on the given topics	5
Task 5	5. Preparation of abstracts for the Conference	5
Task 6	6. Performing design tasks	60

Teaching strategy

The teaching of the Ecology course includes lectures, practical exercises, video lectures, presentations, and independent tasks based on the credit system of education. The report provides theoretical and practical information on the topics covered in the training materials for practical work, explains the procedure for performing practical work and calculating results. Course materials are studied by students independently, students perform practical work individually. The following materials are available to students:

- Video lectures;
- Texts of lectures in electronic form;
- Presentation slides for each topic;
- Practical tasks and control exercises for each topic of the lesson;
- Electronic textbooks and manuals.

During the theoretical classes, the student will be provided with the necessary concepts on the topic through a video lecture. Students will be given instructions on how to use presentations, textbooks, study guides, and other study materials to reinforce the topic. To check the level of assimilation of the topic, students are tested after each topic. If the student completes these tests at the required level, he/she will be allowed to move on to the next topic.

Students will be provided with materials, presentations, instructions for solving problems on each topic of practical work, as well as tasks to test the level of assimilation of the topic. For each section of the course "Ecology" students must work independently on the topics listed in the syllabus and manual for practical exercises in Ecology.

Students who have mastered all the topics of lectures and practical classes are allowed to participate in the final control. The student comes to the university at the end of the semester and passes the final control.

Student Assessment

Assessment of students' knowledge is based on the performance of educational materials (tests, tests and written work) during the semester and final control.

Criteria for assessing and monitoring students' knowledge of the subject

Assessment methods	Rapid online tests, written papers, oral surveys, presentations, etc.		
Evaluation criteria	90-100 "excellent" points		
	Conclusion and decision-making on discipline. Be able to think creatively and have an independent dialogue about science. Be able to apply the acquired knowledge on the subject in practice and explain the essence. To know, to tell. Have an imagination.		
	70-89 points "good"		
	Independent performance of tasks. Be able to apply the acquired knowledge on the subject in practice. To explain the essence. To know, to tell. Have an imagination.		
Types of ratings	Current control	Maximum score (24)	Time of the event
	Task-1. Determination of the demographic capacity of the building area	8	According to the schedule of the educational process 24
	Task-2. Calculation of fees for atmospheric pollution	8	
	Task-3. Natural resources	8	
	Intermediate control	Maximum score (26)	Time of the event
	intermediate control written work, control (the lecture is accepted by the teacher for training).	10	According to the schedule of the educational process
	Independent work	16	During the semester
	Final control	50	
	Total for science	100	

Main literature	
1.	Экология Центральной Азии и сопредельных территорий [Текст] : монография / Ш. Д. Фатхуллаев, Р. Г. Юсупов ; Гос. ком. РУз по геологии и минеральным ресурсам. - Т. : ГП ИМР, 2017. - 165 с. : ил., табл. - Библиогр. в конце глав. - 1 экз.
2.	Экология. Безопасность жизнедеятельности [Текст] : методическое пособие по дисциплине / М. Сапаев [и др.] ; ТУИТ им. Мухаммад Ал-Хоразмий, М-во по развитию информационных технологий и коммуникаций РУз. - Т. : Ред.-изд. отдел при ТУИТ, 2018. - 83 с. - Библиогр.: с. 78. - 5(всего 20) экз

Recommended additional publications	
1.	1. Abirkulov K.N., Abdulkosimov A., Khamdamov Sh. Social ecology, textbook-T.2004.
2.	2. Nigmatov A. Ecological law of the Republic of Uzbekistan. Textbook-T.2004.
3.	3. Environmental protection. Laws and rules. Justice 2002
Electronic sources:	
1.	1. www.gov.uz - Government portal of the Republic of Uzbekistan.
2.	2. www.lex.uz - Website of the Ministry of Justice of the Republic of Uzbekistan.
3.	3. www.ziyonet.uz - Website of the Ministry of Higher and Secondary Specialized Education of the Republic of Uzbekistan.