Education for SDGs: specific courses on sustainability

Bachelor’s degree

№	Subject title	Brief information about the subject
1.	Complex use of water resources	The appearance of water on the globe, types and reserves of water in the hydrosphere, water resources of our planet, the Aral Sea and the Republic of Uzbekistan and their characteristics, the emergence of water problems in the world, the problem of the Aral Sea, water problems in the Republic of Uzbekistan, and ways to solve them. The order and sequence of water supply to participants in the water management complex. The balance of water management, its form, methodology, necessity, principles and analysis, planning for the integrated use of water resources, its stages, CUWR scheme, types, main tasks and methods for its solution are taught.
2.	Environmental Impact Assessment	Environmental impact statement, process stages, meaning of environmental impact assessment; public hearings; categories of enterprises by risk level; inventory of air pollution sources; dispersion characteristics of pollutants, summation effect, reflection of EIA in the legislation and regulatory documents of Uzbekistan; environmental assessment, stages of its transfer, impact of planned enterprises on natural objects; creation of an ecological map of the area.
3.	Sewerage and wastewater treatment	Wastewater account. Conditions for discharging wastewater into sewers. Calculation and construction of the sewer network. Wastewater treatment. Basic cleaning methods. Required level of wastewater treatment. Conditions for the discharge of treated wastewater into a natural reservoir. Methods for treating sewage sludge. They teach methods of wastewater treatment and their use in rural settlements of the Republic of Uzbekistan.
4.	Improving the quality of natural waters	Requirements for drinking water quality. Selecting a water source. Regulatory documents and state water quality standards. Technological scheme for purifying natural waters. Basic methods of water purification. Water purification with and without reagents. Water disinfection. Modern methods of improving water quality (desalination, softening, stabilization, deferrization) are taught.
5.	Ecology and environmental protection	The development of rural society and the interaction of the environment, the current state of the biosphere; the importance of nature conservation, human activities, environmental pollution; environmental factors, adaptation of organisms, populations, ecosystems, principles of their formation and functioning, forms of biological relationships in communities, biological diversity, bioproductivity as the main condition for the stability of the biosphere, anthropogenic impact on the biosphere; natural resources, their classification; basic principles of nature conservation are taught.

6.	Environmental monitoring	Scientific, theoretical and methodological foundations and principles of environmental monitoring; types of environmental monitoring, geological, biosphere, space monitoring; organization of atmospheric air monitoring; monitoring of water bodies and soil; environmental regulation, water and land cadastre; waste monitoring; international aspects of environmental monitoring, structure of environmental monitoring of the Republic of Uzbekistan, fundamentals of environmental monitoring; The basics, principles and methods of environmental forecasting are taught.
7.	Water management	Necessity and principle of water resources management. Types of water management; The need and types of water resource management; The need and types of water quality management; Experience and evolution of water resource quantity and quality management around the world. Water resources management at the level of the river basin and individual participants of the water-chemical complex, integrated water resources management, methods and principles of adaptive water resources management, processes are taught.
8.	Environmental law	Contents of legislation on nature protection and natural resources; formation of environmental and legal worldview and culture; practical application of environmental legislation, property rights to natural resources, legal status of environmental control, liability for violation of environmental legislation, the right to use interstate waters, the right to use water in the Aral Sea basin, the content of environmental policy, mechanisms used in the environmental policy of Uzbekistan, the environmental policy of the republic, environmental indicators; state and non-state institutions implementing environmental policy. The concept of sustainable development, its basic principles, application of the concept of sustainable development of the Republic of Uzbekistan, international environmental cooperation, principles, types. Issues of international environmental cooperation of the Republic of Uzbekistan are taught.
9.	Water law	Water feature. Interstate water bodies. Transboundary water bodies. Law. Convention. Deal with. Agreement. Declaration. Doctor. Concept and sources of water law. Contents. Fundamentals and limits for solving environmental problems related to transboundary water bodies and jurisdictions. International water bodies as boundaries. Water bodies, the environment and the international court. Regulation of the use of international water bodies and its principles. Existing water rights systems. Principles of water rights in Islam. Elements of legal strategy for managing international waterways and facilities are taught.

10.	Environmental protection	Functions of nature in relation to man; Biological balance, its significance, the main causes and consequences of its violation. Natural resources: concept, types and classifications of natural resources. Information about natural resources. Methodological foundations of nature conservation. Natural-historical (scientific) foundations of nature conservation. The basis of nature conservation is the interdependence of man and nature. Fundamentals and methods of atmospheric air protection. Scientific principles and methods of water resources protection. Scientific basis for protecting the aquatic environment and resources from pollution, contamination and depletion. Scientific basis and methods of soil protection: The basis and methods of protecting plant species from extinction or decline are taught.
11.	Environmental Safety	The concept of environmental safety, its sources, system, principles, the formation of environmental safety, environmental safety in environmental management and water management, types of environmental safety and measures to ensure it, legal consequences of techniques and technologies that destroy environmental sustainability Nature, environmental safety in certain areas of the environment studies the system of regulatory legal documents and issues of their improvement, international legal documents in the field of environmental safety.
12.	Water supply	The subject is to provide the necessary knowledge and skills about the methods and methods of implementing water supply, methods for improving water quality, implementing water supply, selecting and designing its optimal systems.
13.	Basics of wastewater treatment and reuse	Teaches effective ways to remove contaminated water from a populated area, convenient methods of purifying it, reusing purified water, selecting and designing its optimal systems.
14.	Plumbing fixtures and building equipment	Works in the field of design, construction and operation of sanitary systems of residential and industrial buildings, ability to perform technological calculations, basic calculations of heating and ventilation systems, design of heating and ventilation systems.
15.	Design of water supply and sewerage facilities	Water supply to cities and industrial enterprises, purification of industrial waters. The subject teaches the selection and design of wastewater treatment methods, wastewater treatment plant equipment, types, calculation principles and optimal systems.
16.	Operation of water supply systems	The subject teaches the provision of quality water to the population and industrial enterprises, as well as their processes associated with the use of water supply systems.
17.	Waste management	Introduces students to various processes of waste pollution, political and regulatory methods of waste management, modern strategies for neutralization and disposal of waste, assessment of the harmful effects of household waste on the environment by storage area.

18.	Instrumental methods of analysis	Theoretical foundations of the method of physicochemical analysis, ion reproduction of water, complex compounds, the essence and methods of quantitative analysis, comparison of methods of chemical and physicochemical analysis of substances, instrumental analysis, determination of their structure through qualitative and quantitative analysis, fluorimetry. Application of optical analysis, chromatography, extraction and other modern methods of analysis in production and training in technological processes of acquired theoretical knowledge.
19.	Water purification	Teaches the basic concepts and methods of purification technology, the necessary knowledge about the quality of natural waters for drinking and industrial purposes.
20.	Engineering ethics	Public administration, politics, environmental legislation, concepts, existing government bodies in the field of ecology and environmental protection, including departments, inspections under the Ministry of Ecology, Environmental Protection and Climate Change of the Republic of Uzbekistan talks about the activities of research institutes. , international cooperation and international environmental organizations WWF, UNESCO, UNEP, FAO.

Master's degree:

№	Subject title	Brief information about the subject
21.	Complex use and protection of water resources	Water is a natural resource, the role of water in nature, the need and purpose of water resource management, rational and economical use of water resources; purpose, different ways of water management, consequences of water management; scientific foundations, methods and stages of water resources protection; The basic methods of rational use of water resources and their protection and their technical solutions, methods of providing water to various sectors of the national economy are taught.
22.	Ecological expertise	Before making a decision to carry out economic and other activities, it is necessary to determine the compliance of such activities with environmental requirements, the negative impact of the planned or implemented economic and other activities on the environment and the health of citizens. can exhibit or has such an effect, teaches to determine the level of environmental hazard of such activities, to protect the environment and to wisely use natural resources.
23.	International and national water relations	Law of the Republic of Uzbekistan "On Water and Water Use", rights and obligations of water users, resolution of the Cabinet of Ministers of the Republic of Uzbekistan on limited use of water, procedure and rules for issuing permits for water use; international principles of water distribution, international agreements and agreements on the use of transboundary water bodies; The strategy for using water resources in the Central Asia and Aral Sea basin and its uniqueness will be taught.
24.	Agroecology	Human-environment interaction related to agricultural activities, human activities in the agricultural sector, environmental pollution; main influencing factors, forms of biological relationships in agroecosystems, structure of agroecosystems, main examples and their dynamics. The basic conditions of agroecological sustainability and the basic principles of environmental protection in agroecology are taught.

25.	Water cadastre. Integrated water resources management.	Government bodies responsible for keeping records of the available volumes of water resources at the country level and the volumes of their use, organizing water reporting in a unified form, as well as reporting on water use by all participants in the water management complex, its procedure, preparation of water balance sheets of water consumers and their accounting by state authorities, planning and implementation of water management and water protection measures provide knowledge and training in integrated water resources management.
26.	Improving water quality	Basic concepts, necessary knowledge about the quality of natural water for drinking and industrial purposes, basic concepts about purification technology and effective ways to remove contaminated water from populated areas for various purposes, convenient ways to purify it, and reuse. purified water, its optimality teaches the selection and design of systems.
27.	Experiment planning	Teaches the selection of the main factors and experimental methods and the choice of experimental design, drawing up an experimental plan and the object of control, preparing measuring instruments and instruments.
28.	Using Models in Water Resources Management (WEAP)	Models used in the field of water resources management, their main goals and capabilities, basics for developing modeling scenarios. Scenarios of global climate change, the basics of using a GIS system in water resources management, modeling of water resources management in a river basin area, and modeling of water quality are taught here.
29.	GIS in water management	GIS plays an important role in decision-making and support for water resource management and landscape planning and is now increasingly used throughout the world. They facilitate integrated data management, analysis and visualization for the real world, taking into account spatial dimensions. The GIS system is an exploration of the complex issues of water and land management in Central Asia.
30.	Environmental audit	The subject consists of a systematic assessment of environmental consciousness and ecological thinking, the influence of various aspects of modern economic activity of enterprises on the environmental situation, the formation of environmental thinking and environmental consciousness among students in the process of making business decisions and acquiring practical skills. in this regard.
31.	Hydroecology	Hydroecology studies the laws and principles of hydroecology, nonliving and living components of the hydrosphere on a global and local scale, their origin, formation and mechanisms of interaction, evolutionary development, environmental and anthropogenic factors and patterns of their influence on hydroecosystems.
32.	Regulatory support for waste management	On the legal basis for waste management and its elements; Strategy for performing work related to waste and the regulatory framework for waste management; The Law on Waste, its content and essence; Government departments and their powers in the field of waste; Ensuring safety when carrying out work related to waste; Standardization and environmental certification of waste in the field of waste management. Rules for collection and removal of waste; Disputes related to waste management and the procedure for their resolution; Teaches issues of international cooperation and experience in the field of legal regulation of waste management.

33.	Ecotoxicology and ecochemistry	Creation of theoretical concepts in the field of molecular, environmental and industrial toxicology, toxicokinetics, toxicodynamics, toxicometry; the place and routes of pollutants and compounds entering the environment (into non-living and living components of the ecosystem) and in food chains, the dependence of the toxic effect of pollutants on environmental environmental factors; study the mechanism and level of toxic effects of pollutants on the environment, master qualitative and quantitative methods of assessment at the population and ecosystem levels, biotesting, formation of a xenobiotic profile, development of scientifically based recommendations for protecting the environment from toxic pollution. will
34.	Climate change and sustainable development	The subject teaches the principles of sustainable development to create an understanding of the factors that create the climate and planets, as well as the relationships in the climate system, the causes and consequences of climate change and the environmental risks associated with climate change.
35.	Global climate change	Natural and anthropogenic causes of global climate change, historical changes in climate indicators, the relationship between climate change and sustainability, opportunities for reducing greenhouse gas emissions, principles for developing and assessing sustainable development indicators, low-learning market mechanisms for promoting low-carbon development.
36.	GIS in waste management	Working with the ArcCatalog Tool. Main components of GIS. Working with the ArcMap program. Providing information to GIS. Basic spatial data models. Data analysis and modeling. Perception and presentation of information. Information models and structures. Map projections. Map projections. Presentation of the map. Datums and georeferencing. Visualization of geographic information. Satellite navigation system. Spatial data infrastructure. Teaches how to map waste and degraded lands using GIS.
37.	Interdependence of water, energy, food and ecosystems	Theoretical foundations, basic concepts and principles of knowledge about the interdependence of water, energy, food and ecosystems, contradictions that arise when using them, and ways to solve them.