

Fundamentals of environmental and energy sustainability of production

annotation

TO THE CURRICULUM OF A HIGHER EDUCATION INSTITUTION

for the specialty

6-05-0714-03 Engineering and technical design and production of materials and products from them
profiling Welding production equipment and technologies

	Форма получения высшего образования		
	Full-time (full-time)	Part-time	Part-time abbreviated
Course	2	2	1
Term	3	3	2
Lectures, hours	16	4	4
Practical exercises, hours	16	4	4
Course Credit,	3	3	2
semester	32	8	8
Classroom hours per academic discipline Independent work, hours	76	100	100
Total hours of academic discipline / credits	108/3	108/3	108/3

1. Summary of the academic discipline

The concept of "production sustainability". Global processes of changing the state of the planet Earth. Local and regional environmental problems in the Republic of Belarus and the Russian Federation The concept of sustainable development The economics of sustainable development. Resource potential of the Republic of Belarus Organization of environmental sustainability of production. Organization of energy sustainability of production

2 Learning outcomes

to know:

- features of the interaction of production and the natural environment;
- anthropogenic and technogenic influence on the condition and dynamics of geological shells
- environmental problems arising from production (environmental pollution and depletion of natural resources);
- problems of exhaustion and loss of quality of natural resource deposits
- the influence of natural factors and natural resources on production efficiency and regional specialization;
- methods of environmental management in order to reduce anthropogenic impact and organize sustainable production;
- principles of sustainable development;
- International experience and cooperation for sustainable development;
- the main directions of the state policy in the field of energy saving;
- legislation of the Republic of Belarus and the Russian Federation in the field of environmental protection and rational use of natural resources and its connection with the ecological and energy sustainability of production;
- the main directions of the transition to sustainable development and a "green" economy;
- technological, economic and environmental problems of the introduction of the "green economy";
- methods of production, transportation and consumption of thermal and electric energy, as well as the main ways to increase their efficiency;
- environmental and economic problems of energy and the main ways to solve them;
- resource potential of the Republic of Belarus;
- the potential of renewable energy sources in the Republic of Belarus;
- environmental quality management tools;
- the economic mechanism of environmental management;
- technical and technological methods for reducing environmental pollution.

be able to:

- to assess the level and consequences of environmental pollution and depletion of natural resources;
- to predict the consequences of anthropogenic pressure on the environment;
- to justify the choice of methods to reduce environmental impact;
- use regulatory and legal documents in the field of environmental protection;
- to implement a systematic approach to the organization of energy efficiency,
- to evaluate technological processes and devices in terms of their energy efficiency;
- use metering, control and regulation devices for thermal and electrical energy;
- to introduce modern information technologies into practical activities, to form and use databases of energy-efficient technological processes, aggregates and devices;
- to use and promote the main methods of energy saving and energy efficiency improvement;

have a skill:

- analysis of environmental quality criteria;
- determination of the state of the environment;
- assessment of the energy efficiency of production;
- improving energy efficiency in various sectors of human activity

3. Emerging competencies

Names of formed competencies
Apply methods to protect production personnel and the population from the effects of negative factors of anthropogenic, man-made, natural origin, the principles of rational environmental management and energy conservation, to ensure healthy and safe working conditions

4. Requirements and forms of current and interim certification

The following forms are used to diagnose competencies:

- oral;
- written;
- oral and written.

The following diagnostic tools are used to assess the level of knowledge of students:

Current certification:

- written reports on practical work (written form);
- reports on practical work with their oral defense (oral and written form);
- assessment based on a modular rating system (oral and written form);

Intermediate certification:

- oral tests (oral form).