

## Fundamentals of environmental and energy sustainability of production

### ANNOTATION

#### КУЧЕБНОЙ ПРОГРАММЕ УЧРЕЖДЕНИЯ ВЫСШЕГО ОБРАЗОВАНИЯ

**Specialty** 1-36 01 03 Technological equipment of machine-building production  
Specialist Qualification Engineer

	<b>STUDY MODE</b> Full-time
Semester	3
Lecture, hours	34
Laboratory classes, hours	16
Test, semester	3
Classroom hours for the academic discipline	50
Independent work, hours	58
Total course duration in hours / credit units	108/3

#### 1. Brief content of the discipline

Environment as systems. Basic laws of ecology and rational nature management. Natural resources and their use. The impact of the enterprise on the environment. Fundamentals of regulation in the field of environmental protection. Environmental quality management tools. Legal regulation of economic activity in nature management. Organization of energy saving management in the Republic of Belarus. Regulatory and legislative framework in the field of energy saving. Ways of obtaining, transporting and using energy. Renewable energy sources. Secondary energy resources. Accounting and regulation of energy resources. Energy saving in industry. Energy saving in buildings and structures. Energy saving at home. Organization of energy management at an industrial enterprise. Energy audit. Development of an energy saving program for an industrial enterprise.

#### 2 Learning outcomes

know:

- patterns of functioning of natural ecosystems and the biosphere;
  - features of interaction between production and the environment;
  - environmental problems resulting from production (environmental pollution and depletion of natural resources);
  - methods of environmental management in order to reduce the anthropogenic impact and organize sustainable production;
  - the main directions of the state policy in the field of energy saving;
- methods of production, transport and consumption of thermal and electrical energy, as well as the main ways to improve their efficiency;
- environmental and economic problems of energy and the main ways to solve them;

be able to:

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

own:

- analysis of environmental quality criteria;
- methods for determining the state of the environment;
- methods for determining energy saving and energy efficiency of production.

#### 3. Formed competencies

Code	Names of competencies being formed
БПК-14	Be able to apply the basic rules of safety, industrial sanitation, fire safety and methods for protecting production personnel, the public and the environment from possible consequences of accidents and natural disasters, man-made disasters

#### 3. Requirements and forms of current and intermediate certification

- oral (oral tests);
- written (test);
- Oral and written (protection of laboratory work).

To assess the level of knowledge of students, the following diagnostic tools are used:

- test / control tasks;
- questions for practical work, for the test.