

OP 6V07220-Machines and technologies for processing new materials

The purpose of the educational program is to train highly qualified and competitive specialists to successfully solve scientific and engineering problems, who are able to solve scientific and engineering problems in the field of materials processing, taking into account development control. The program focuses on designing and implementing progressive, resource-saving and environmentally friendly technological processes, developing innovative employment, and ensuring high-quality, accessible and practice-oriented training in order to implement the SDGs.

Development plan

1. Updating and developing the curriculum:
 - Updating of disciplines with an emphasis on courses in additive manufacturing, new composite materials, nanomaterials in the production of blanks in mechanical engineering.
 - Practical work on Life Cycle Assessment and resource conservation.
2. Human resource development
 - Professional development of teachers in leading professional research centers and enterprises.
 - Involvement of industry experts and practitioners in conducting disciplines and master classes.
3. Research and project activities
 - Involvement of students in R & D from early years.
 - Organization of design and research competitions.
 - Development of student startups as part of project-based training.
4. International cooperation
 - Creation of double degree programs and academic exchanges.
5. Interaction with the industry
 - Development of a system of internships and internships at enterprises.
 - Students ' participation in research and development projects in cooperation with production facilities.

Evaluation of the effectiveness of the development of the OP

- Regular survey of students, graduates and employers.
- Analysis of professional success of graduates.
- The level of implementation of scientific developments in practice.

The uniqueness of the OP "Machines and technologies for processing new materials"

1. Focus on new and promising materials

The program is aimed at mastering technologies for processing the latest materials- nanostructured, composite, and smart materials, which makes graduates particularly in demand in high-tech industries.

2. Comprehensive engineering training

The OP combines a fundamental scientific base with practical skills in designing and implementing advanced technological processes, including laser, plasma, ultrasonic and additive processing methods.

3. Focus on sustainable development

Developing students 'environmentally-oriented thinking and skills in implementing resource-saving technologies is consistent with the global Sustainable Development Goals (SDGs), including reducing waste and improving energy efficiency.

4. Development of innovative employment

It promotes students ' involvement in research, startups, and project activities, which develops entrepreneurial competencies and encourages the creation of new technological solutions.

5. Integration of science and production

Graduates have skills not only in engineering practice, but also in scientific analysis, including modeling methods, analysis of the structure of materials and quality control of technological processes.

6. Flexibility and market relevance

The programme provides knowledge and skills that are in demand in the engineering, energy, automotive and other industries where new materials are used and high processing accuracy is required.