

## **Objective of OP 6B07109 Engineering Physics and Materials Science**

**The purpose of the educational program** is to provide fundamental and practical training for students to solve scientific and engineering problems in various fields of technical physics and materials science, as well as to develop students' skills in engineering analysis and design.

### **The formed educational outcomes**

- ✓ explain the specifics of the functional purpose of equipment in the field of materials science and the possibility of its digitalization;
- ✓ Integrate knowledge in professional activities and have the competence to argue their ideas when making decisions in the field of engineering and technology.
- ✓ choose the best methods for solving the problems of materials science, nanoproduction, processing and modification of materials;
- ✓ carry out preparation prior to setting up and testing process equipment and modern scientific apparatus to study the structure of materials using physical experiments;
- ✓ analyse the economic costs of product quality, including both production and non-production costs, forecasting process parameters to optimise the process;
- ✓ plan the organization and conduct of an experiment to obtain materials with special physical and chemical properties (porous nanostructures, magnetic nanomaterials, nanobiomaterials);
- ✓ apply physical and chemical methods for obtaining nano-objects and their composites for solving applied problems, as well as methods for describing structures, structures, composition, morphologies;
- ✓ to substantiate the choice of experimental methods for studying systems with micro- and nano-sizes;

### **Future professions:**

- educational;
- research (on the study of the structure and properties of materials, when choosing the necessary research methods and mastering new technological processes, when writing and publishing scientific articles, preparing scientific reports and reports at scientific conferences) (laboratory assistant; engineer; junior researcher);
- industry (engineering companies);
- production and technological (manufacture of various technical devices, devices and equipment, and activities to control the state of the production and technological process).