

MATERIALS SCIENCE AND COMPOSITE MATERIALS

ANNOTATION

TO THE CURRICULUM OF AN EDUCATIONAL INSTITUTION

Specialty 6-05- 0722- 05 Production of Products Based on Three-Dimensional Technologies

	Form of higher education
	Full-time (full-time)
Course	3
Semester	5
Lectures, hour	34
Laboratory classes, hour	34
Credit, semester	5
Classroom hours in the academic discipline	68
Independent work, hours	40
Total hours / credits	108 / 3

1. Summary of the academic discipline

The discipline studies the structure and properties of metals, alloys and other structural materials, as well as methods of their processing for the manufacture of parts with specified properties. The following topics are covered: Structure of metals. Iron and its alloys. General-purpose structural steels. Metal-ceramic alloys. Refractory metals and their alloys. Aluminum, magnesium and their alloys. Copper and its alloys. Composite materials.

2. Learning outcomes:

To know:

- modern materials and effective methods of hardening treatment;
- Fundamentals of the theory and practice of thermal, chemical-thermal treatment of metallic materials;

can:

- rationally use reference literature on the choice of materials, technologies for their processing, providing the necessary indicators of properties;
- correctly determine the areas of application of a particular material;
- Assign methods and modes of modifying processing structures.

have the skill:

- study of the structure, properties of materials and their heat treatment;
- selection of a particular material based on operating conditions.

3. Competencies to be formed:

Know the basic properties, structure, marking and methods of hardening ferrous and non-ferrous metals and alloys of operation.

4. Requirements and forms of current and intermediate certification.

The defense of laboratory works is carried out in a test form.

The test is carried out in writing in the form of answers to test questions.