

Course Description

Discipline/Course: Modern technologies

Direction of PLO 22.03.01 "Material Science and Materials Technologies"

Profile of training Material Science and Materials Technology in Mechanical Engineering; Nanostructural materials

Instructor: Gordienko A.I., PhD

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Learning Outcomes:

The discipline "Modern technologies" is devoted to the study of traditional and modern technologies for obtaining materials, the analysis of modern technologies from the point of view of the rational use of natural resources and environmental protection.

Course Outline:

Section 1. What is "modern technology of materials".

Lecture topics:

1. What is "technology of materials" and "modern technology of materials".
2. Historical overview of the evolution of "materials technology".
3. Classification of receipt (production) of materials: past, present, future.
4. Strategic directions for the development of materials and technologies for their processing for the period up to 2030.
5. Tasks of modern materials science.

Section 2. Traditional technologies for obtaining (production) materials.

Lecture topics:

1. Structural engineering materials.
2. Basics of metallurgical production.

Section 3. Modern technologies for obtaining (production) materials.

Lecture topics:

1. Powder metallurgy.
2. PIM technologies.
3. Additive technologies.

Course Delivery: one semester, 72 hours

Prerequisites: "Material Science", "General Metallurgy", "Mechanical properties of materials"

Final Assessment: credit

Course Developer: Gordienko A.I., PhD