„Material Science“ code: 20

Included in the Curriculum of the specialty: Industrial Management

Annotation:

Material Science is an engineering general discipline. The course examines the structure and properties of the materials. Students are acquainted with the basic methods of material processing during extraction, shape change, improvement of properties by heat treatment and complex methods of impact.

The course examines the basic engineering materials – ferrous alloys (steel, cast irons) and non-ferrous metal and alloys: aluminium, copper, magnesium, titanium. A substantial section is devoted to non-metallic materials - polymers, ceramics, composites, as well as to some modern materials with specific properties.

One of the objectives of the course is to acquire knowledge about the metallurgical production of ferrous and non-ferrous alloys, as well as the methods of working of metallic and non-metallic materials, by casting, plastic deformation, welding, heat treatment for plastics, rubber, metal ceramics.

Main issues of the syllabus content:

* Structure and properties of materials;

Major engineering materials on iron and non-ferrous basis;

* Fundamentals of the theory and practice of heat treatment;
* Non-metallic materials - polymers, ceramics, composites;
* Extraction and basic technological operations for molding the materials.