MATERIALS SCIENCE
(name of the discipline)

ANNOTATION
TO THE CURRICULUM OF A HIGHER EDUCATION INSTITUTION
For specialties

6-05-0713-04 Automation of technological processes in production;
Specialization: "Automation of technological processes and productions in mechanical engineering".
6-05-0714-02 Mechanical engineering technology, metal cutting machines and tools;
Specialization: "Technology of mechanical engineering".
6-05-0714-02 Mechanical engineering technology, metal cutting machines and tools;
Specialization: "Equipment and technologies for highly efficient metalworking processes".
6-05-0714-02 Mechanical engineering technology, metal cutting machines and tools;
Specialization: "Technological equipment of machine-building production"
6-05-0714-03 Engineering and technical design and production of materials and products from them;
Specialization: "Equipment and technology of welding production"
6-05-0715-03 Cars, tractors, mobile and technological complexes;
Specialization: Computer engineering in lifting and transport engineering"
6-05-0715-03 Cars, tractors, mobile and technological complexes;
Specialization: "Computer engineering in construction and road engineering"
6-05-0715-03 Cars, tractors, mobile and technological complexes;
Specialization "Computer engineering in the automotive industry"
6-05-0715-07 Operation of ground transport and technological machines and complexes;
Specialization "Technical operation of cars"; "Car service"

For the specialty 6-05-0713-04 Automation of technological processes in production

	The form of higher education
	Full-time (full-time)
Course	2
Term	4
Lectures, hours	34
Laboratory classes, hours	34
Exam, semester	4
Classroom hours per academic discipline	68
Independent work, hours	76
Total hours of academic discipline / credits	144/3

For specialties 6-05-0714-02 Mechanical engineering technology, metal-cutting machines and tools; 6-05-0714-03 Engineering and technical design and production of materials and products from them

	The form of higher education	
	Full-time (full-time)	Correspondence
Course	2	3
Term	4	5
Lectures, hours	34	6
Laboratory classes, hours	34	6
Exam, semester	4	5
Classroom hours per academic discipline	68	14

Classroom control work		5 (2 hours)
Independent work, hours	40	94
Total hours of academic discipline / credits	108/3	108/3

For specialties 6-05-0715-03 Cars, tractors, mobile and technological complexes; 6-05-0715-07 Operation of lifting transport and technological machines and complexes

	The form of higher education	
	Full-time (full-time)	Correspondence
Course	2	2
Term	3	3
Lectures, hours	16	4
Laboratory classes, hours	34	6
Exam, semester	3	3
Classroom control work		3 (2 hours)
Classroom hours per academic discipline	50	12
Independent work, hours C	58	96
Total hours of academic discipline / credits	108/3	108/3

1 The purpose of the discipline is for students to acquire knowledge about the structure and properties of metals, alloys and other structural materials, as well as about the methods of their preparation and processing to obtain parts with specified properties and configuration.

2 Planned results of the study of the discipline.

As a result of mastering the discipline, the student must:

to know:

- methods for studying the structure and properties of materials;
- fundamentals of theory and practice of thermal, chemical-thermal, thermomechanical processing of metal materials;
- practical ways to study the structure, properties of materials and their heat treatment;
- modern materials and effective methods of their heat-hardening treatment.

be able to:

- it is rational to use the reference literature on the choice of materials, technologies of their processing, providing the necessary indicators of properties;
- it is correct to determine the application areas of a particular material;
- assign methods and modes of structure-changing processing that ensure optimal properties of materials when working under certain operating conditions.

have a skill:

- studying the structure and properties of materials;
- determination of the structure and properties of materials;
- applications of various materials.

3 The development of this academic discipline should ensure the formation of the following competencies:

	The names of the competencies being formed
6-05-0713-04 Automation of technological processes in production; Specialization: "Automation of technological processes and productions in mechanical engineering".	
To know the relationship of the structure and composition of metals with their mechanical properties, methods of heat treatment of metals and alloys, methods of their research, basic properties and scope of application	
6-05-0714-02 Mechanical engineering technology, metal cutting machines and tools;	

Specialization: "Technology of mechanical engineering".
To use knowledge about the relationship of the structure and composition of metals with their mechanical properties, methods of heat treatment of metals and alloys, methods of their research, fields of application.
6-05-0714-03 Engineering and technical design and production of materials and products from them; Specialization: "Equipment and technology of welding production"
To know the relationship of the structure and composition of metals with their mechanical properties, methods of heat treatment of metals and alloys, methods of their research, basic properties and applications
6-05-0715-03 Cars, tractors, mobile and technological complexes; Specialization: Computer engineering in lifting and transport engineering"
To select and determine the composition and basic properties of materials by brand for the production of cars, tractors and electric vehicles
6-05-0715-07 Operation of ground transport and technological machines and complexes; Specialization "Technical operation of cars"; "Car service"
To master the basics of research, to search, analyze and synthesize information
To select structural materials of a certain composition and functional properties during maintenance and repair of cars

4 Requirements and forms of current and intermediate certification.
The protection of laboratory work is carried out orally.
The exam is conducted in writing in the form of answers to test questions.