NANOMATERIALS AND NANOTECHNOLOGIES

(name of the discipline)

ANNOTATION
TO THE CURRICULUM OF THE INSTITUTION OF HIGHER EDUCATION

Specialty 1-36 01 04 Equipment and technologies for highly efficient material processing processes

Form of higher education	
	Full-time (daytime)
Well	3
Semester	6
Lectures, hours	68
Laboratory classes, hours	16
Report, semester	6
Classroom hours per academic discipline	84
Independent work, hours	96
Total hours per academic discipline / credit units	180/5

1. Brief content of the discipline

The discipline "Nanomaterials and Nanotechnologies" contains general ideas about the classification of material objects, methods for their study, the features of the state and methods for obtaining low-sized particles, the structure and properties of nanosized particles used in materials science, the features of the energy state of nanosized particles, the prospects for the development of nanomaterials and nanotechnologies in mechanical engineering.

2. Learning Outcomes

A student who has studied the discipline should **know**:

–basic ideas about the structure and properties of nanomaterials, technological methods for obtaining and controlling their properties, processing technology;

–physical foundations of processes occurring in systems containing nanoparticles; basic methods for obtaining nanomaterials;

A student who has studied the discipline should **be able to**:

–use the skills of structural features of nanocomposite systems, physical and chemical methods of controlling their properties, physical and chemical bases, principles and methods of research, testing and diagnostics of substances and materials;

A student who has studied the discipline **must have**:

–skills of an integrated approach to the choice of nanomaterials in solving simple physical and technical problems;

–skills in using reference, scientific, technical and technical literature on the physics of materials, methods of their formation and processing of materials and technologies for their processing and modification.

3. Formed competencies

Codes of generated competencies	Names of competencies being formed
SK-8	Know the properties, modern methods of physical analysis, technology for obtaining and processing nanomaterials and be able to apply this knowledge to manage product quality

4. Requirements and forms of current and intermediate certification

Current and intermediate certification is carried out in written and oral-written form through reports on laboratory work with their oral defense, a written exam