

MACHINE PARTS AND DESIGN BASICS

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)
Course	3
Semester	5
Lectures, hours	68
Practical (seminar) classes, hours	34
Laboratory classes, hours	16
Course project, semester	6
Exam, semester	5
Classroom hours per academic discipline	118
Independent work, hours	62
Total hours per academic discipline/ credits	180/5

1. Brief content of the discipline

The academic discipline includes the study of methods for manufacturing machine parts for general machine-building purposes from various materials; study of the interaction of parts and physical processes accompanying their work, as well as the types and nature of the destruction of parts and, on this basis, the definition of criteria for their calculation; studying the basics of engineering methods for designing machine parts that provide the required reliability indicators; familiarization of students with the basics of the theory of technical systems, basic information on optimizing solutions to engineering problems, general and special quality criteria, the influence of technical factors on the efficiency of design and engineering solutions.

2. Learning outcomes

know:

- designs, type, materials and methods for manufacturing parts of general-purpose machines;
- interaction of parts and physical processes accompanying their work, taking into account the resistance to the impact of operational factors, types and nature of destruction of parts and determining the criteria for their performance and calculation;
- engineering methods for calculating parts and assemblies of machines that ensure their required reliability;
- methods of computer-aided design and construction using computer graphics;

be able to:

- perform engineering calculations of parts and assemblies of machines, ensuring their required reliability and durability;
- to design parts, assemblies and drives for general engineering purposes;
- carry out design development of parts, assemblies and drives using design standards, standard designs, standards and other regulatory materials;

own:

- methods for substantiating the designs of units and parts of machines;
- methods of computer-aided design and construction of typical machine parts;
- methods of engineering calculation of parts and components of machines, ensuring their required reliability;
- the basics of designing mechanisms;
- calculations of the main mechanical gears and connections;
- information about typical designs and materials of machine parts and assemblies;
- reference materials of typical elements of machine structures.

3. Formed competencies

BPK-11 Own methods of design calculations of machine parts, components and drives of technological equipment, be able to develop and analyze kinematic and dynamic schemes of mechanisms.

4. Requirements and forms of current and intermediate certification.

- oral and written: defense of laboratory work, individual assignments, course project;
- written: exam.