

# MACHINE PARTS

(name of the discipline)

## ANNOTATION TO THE CURRICULUM OF THE INSTITUTION OF HIGHER EDUCATION

**Specialties** 1-36 01 01 "Technology of mechanical engineering", 1-36 01 03 "Technological equipment of machine-building production", 1-53 01 01 "Automation of technological processes and production (by directions)"

**Direction of the specialty** 1-53 01 01 "Automation of technological processes and production (engineering and instrumentation)"

**Specialization** 1-36 01 01 01 "Technology of mechanical assembly production", 1-36 01 01 03 "Technology of automated production", 1-36 01 03 01 "Metal cutting machines", 1-36 01 03 02 "Tool production", 1-53 01 01 - 01 03 "Automation of technological processes for the manufacture of parts and assemblies"

|  | 1-36 01 01          |           |                       | 1-36 01 03          |           | 1-53 01 01            |
|--|---------------------|-----------|-----------------------|---------------------|-----------|-----------------------|
|  | Full-time (daytime) | Part-time | Part-time abbreviated | Full-time (daytime) | Part-time | Part-time abbreviated |
| Well   | 3                   | 3         | 3                     | 3                   | 3         | 3                     |
| Semester   | 5                   | 6         | 5                     | 5                   | 5         | 5                     |
| Lectures, hours                                    | 68                  | 8         | 14                    | 68                  | 16        | 68                    |
| Practical (seminar) classes, hours                 | 34                  | 4         | 8                     | 34                  | 8         | 34                    |
| Laboratory classes, hours                          | 16                  | 4         | 4                     | 16                  | 4         | 16                    |
| Course project, semester                           | 6                   | 6         | 5                     | 6                   | 6         | 6                     |
| Exam, semester                                     | 5                   | 6         | 5                     | 5                   | 5         | 5                     |
| Classroom hours per academic discipline            | 118                 | 16        | 26                    | 118                 | 28        | 118                   |
| Independent work, hours                            | 42                  | 144       | 134                   | 42                  | 132       | 42                    |
| Total hours per academic discipline / credit units | 160/4               |           |                       | 160/4               |           | 160/4                 |

### 1. Brief content of the discipline

The academic discipline includes the study of structures, types, materials, as well as methods for designing parts of general-purpose machines; study of the interaction of parts and physical processes accompanying their work, as well as the criteria for their performance and analysis (calculation); study of methods of analysis (calculation) of parts and components of machines that provide the required service life; mastering the skills of designing parts and assembly units of general-purpose mechanisms; studying the methods of automated design of machine parts, the use of software packages for design (including Siemens NX, ANSYS, MSC.ADAMS, etc.).

### 2. Learning outcomes

know: designs, type, materials and methods of manufacturing general-purpose parts; 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 the definition of criteria for their performance and calculation; engineering methods for calculating parts and components of machines that ensure their required reliability; methods of automated and design and construction using computer graphics;

be able to: perform engineering calculations of parts and assemblies of machines, ensuring their required reliability and durability; 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 of substantiation of designs of knots and details of machines; methods of engineering calculation of machine parts and assemblies; information about typical designs and materials of machine parts and assemblies.

### 3. Formed competencies

For specialty 1-36 01 01: BPK-4.3 Know the requirements for typical machine parts, be able to design these parts and assemblies and perform their calculations.

For specialty 1-36 01 03: BPK-11 Be able to design parts and products of mechanical engineering in accordance with the technical specifications, providing the necessary strength and durability of structures, using standard methods and automation tools.

For specialty 1-53 01 01: SK-2.3 To know the requirements for typical machine parts, be able to design these parts and assemblies and perform their calculations.

### 4. Requirements and forms of current and intermediate certification.

- Oral and written: performance of test tasks; defense of laboratory work, individual assignments, course project;
- written: exam.