MACHINE PARTS AND DESIGN BASICS
(course title)

COURSE SYLLABUS ABSTRACT

6-05-0714-02 Mechanical engineering technology, metal-cutting machines and materials processing tools
(speciality code and name)

Equipment and technologies for highly efficient material processing processes
(concentration)

	STUDY MODE
	full-time
Year	2
Semester	3
Lectures, hours	16
Laboratory classes, hours	16
Exam, semester	3
Contact hours	32
Independent study, hours	112
Total course duration in hours / credit units	144 / 4

1. Course outline

The discipline studies the interaction of parts and components of machines operating in the presence of friction and the physical processes that accompany the operation of such parts.

2. Course learning outcomes

Upon completion of the course, students will be expected to

know: the basic laws of natural science disciplines to determine the basic properties of raw materials, the influence of material properties on resource saving and reliability of technological processes during friction; physical and mechanical properties of surfaces, types, characteristics, laws and basic theories of external friction; technological schemes, methods of quality control of products operating under conditions of friction and wear, methods for determining the coefficient of external friction;

be able to: apply the methods of mathematical analysis of processes in determining the optimal and rational technological modes of equipment operation in friction conditions; carry out standard tests and technical control of the development and operation of friction units of machines; analyze the causes of violations of technological processes during friction; determine the amount of wear and the ability of the material to resist various types of loads, use the effect of wearlessness;

to possess a skill: modeling, theoretical and experimental research to assess the quality and properties of friction surfaces, lubricants and additives for them operating under friction conditions; development of measures to prevent violations of technological processes when determining the influence of various factors on the coefficient of external friction and on the properties of friction surfaces operating under wear conditions.

3. Competencies

Know the causes and patterns of wear and destruction of machine and equipment parts, methods to increase their durability and be able to apply them in practice.

4. Requirements and forms of midcourse evaluation and summative assessment.

- written form (test tasks; exam);
- oral-written form (reports on laboratory work with their oral defense).