EQUIPMENT FOR PHYSICAL AND PHYSICAL-TECHNICAL PROCESSING

(name of the discipline)

COURSE SYLLABUS ABSTRACT

6-05-0714-02 Mechanical engineering technology, metal-cutting machines and tools

(speciality code and name)

Equipment and technologies for highly efficient material processing processes

(concentration)

	STUDY MODE
	Full-time
Year	4
Semester	7
Lectures, hours	34
Laboratory classes, hours	34
Pass/fail, semester	7
Contact hours	68
Independent study, hours	40
Total course duration in hours / credit units	108/3

1. Course outline

The course "Equipment for physical and physical-technical processing" contains general ideas about physical and physical-technical methods of processing in modern mechanical engineering, physical-technical methods of processing, technological principles of processing on metal-cutting machines of various types, etc.

2. Course learning outcomes

Upon completion of the course, students will be expected to **know**: Operating principles of electron beam and ion guns; operating principles of lasers and their main types; current status and development prospects of technologies and technological equipment in the global market, technical equipment of the mechanical engineering industry; theoretical foundations, methods of modeling and experimental study of mechanical and physical-technical processing processes, including combined processing processes with the superposition of various physical and chemical effects.

be able to: Use lasers, electron beams, and ion guns; predict and create technological processes for mechanical and physical-technical processing, equipment, and tools based on new physical effects.

to possess a skill:basic scientific and theoretical knowledge and apply it to solve theoretical and practical problems; an interdisciplinary approach to problem solving; skills in performing calculations and justifications when choosing conditions for mechanical and physical-technical processing of materials.

3. Competencies

Possess knowledge of the designs of the main types of machining tools and the ability to design them using CAD, master modern methods of materials processing, including methods of processing with concentrated energy flows

4. Requirements and forms of midcourse evaluation and summative assessment

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