VACUUM ENGINEERING AND SOURCES OF CONCENTRATED ENERGY FLOWS

(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 work, hours	40
Total course duration in hours / credit units	108/3

1. Course outline

The course "Vacuum Technology and Sources of Concentrated Energy Flows" contains general concepts of vacuum physics, pressure measurement methods, vacuum generation methods, leak detection and vacuum system design, electron beam guns and technological lasers, and ion sources.

2. Course learning outcomes

Upon completion of the course, students will be expected to **know**: – operating principles of vacuum sensors; – basic designs of vacuum pumps; – operating principle of electron beam and ion guns; – operating principle of lasers and their main types;

be able to:

– obtain and measure vacuum; – use laser, electron beam and ion guns;

to possess a skill:

- basic scientific and theoretical knowledge and apply it to solve theoretical and practical problems; - an interdisciplinary approach to problem solving.

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.