Tooling Design
(course title)

COURSE SYLLABUS ABSTRACT

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

Machine-building process equipment
(concentration)

	STUDY MODE
	full-time
Year	4
Semester	8
Lectures, hours	24
Practical classes (seminars), hours	24
Pass/fail, semester	8
Contact hours	48
Independent study, hours	60
Total course duration in hours / credit units	108/3

1. Course outline

Main stages of tool production design. Quantity calculation. The structure of the working composition of the workshop. Layout of equipment and workplaces. Design of assembly areas. Design of repair and mechanical shops. Designing tool shops for general machine building production. Design of auxiliary departments and workshops. Determination of total demand for materials and energy. Automated instrumentation. Design of the workshop's port systems. Basic information on the construction part of industrial buildings. Design flexible runs with NC machines. Peculiarities of designing chemical-thermal departments. Peculiarities of casting and forging press equipment design.

2. Course learning outcomes

Upon completion of the course, students will be expected to

know**:** Main motion drives. Formula of the drive structure. Connecting group transmissions. Feed drives. Kinematic calculation of the drive. Spindle assemblies. Stepless drives. Load-bearing system of the machine. Traction devices. Machine control systems;

be able to**:** outline the options for the equipment arrangement according to the performed technical process; outline and determine the number of transport and lifting technical systems and the scheme of their interaction with process equipment; determine the number of process equipment and the area occupied by it; Determine the number of vehicles determine the number of workers in the workshop and in the area, the flow line; develop the layout of the production line, section, workshop taking into account the rational organizational structure; develop the construction part of the workshop layout design (cross section of the workshop span); develop a project of auxiliary departments of the workshop;

to possess a skill: the basis for designing tool production; methods of conducting patent research, protecting intellectual property, scientific and technical approach to solving engineering problems, creating and introducing innovations.

3. Competencies

Know the main tasks and sequence of designing tool areas and workshops, methods of calculating and quantity of equipment, rules of its location, design of auxiliary divisions of tool shop.

4. Requirements and forms of midcourse evaluation and summative assessment

– verbal-written: protection of practical classes, test.