

Design and Calculation of Parts and Mechanisms of Metal-Cutting Machines

(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	3
Semester	6
Lectures, hours	34
Laboratory classes, hours	16
Course paper, semester	6
Exam, semester	6
Contact hours	50
Independent study, hours	94
Total course duration in hours / credit units	144/4

1. Course outline

Main motion drives. Main motion drive structure. Classification of drives. Requirements for main motion and feed drives. Graph-analytical method of kinematic calculation. Speed boxes driven by multi-speed motors. Innings drive. Spindle assemblies of metal cutting machines. Rolling bearings. Guide frames and movable parts. Sliding screw-nut transmission design. Linear motor.

2. Course learning outcomes

Upon completion of the course, students will be expected to know: principles of design and calculation of modern metal cutting machines and machine tools; modern methods for calculating drives, assemblies and parts of metal-cutting machines; advanced design of machine tools and machine tools, their technological capabilities; features of rational operation of universal and automated equipment; procedures for designing machine tools.

be able to: set and solve tasks related to the development of machine tools, machine tools, assemblies and parts of metal-cutting machines; carry out patent search and use patent information in the design of assemblies and parts of metal-cutting machines.

to possess a skill: methods of designing machine tools and machine tools; modern PC and other computer equipment; modern computer-aided design systems.

3. Competencies

Master the basics of designing machinery mechanisms, technological equipment and technological processes of machine-building production. Be able to design technological processes for processing parts and assembling machines. Be able to design metal cutting machines and their technological equipment.

Be able to design metal cutting machines and their technological equipment using aggregation methods, basic models, modular design, performing the necessary calculations for strength, rigidity, accuracy, thermal stability, as well as engineering experiments in order to ensure the quality of the designed equipment.

4. Requirements and forms of midcourse evaluation and summative assessment

– verbal-written: protection of laboratory protection, heading work, exam.