Basics of cutting theory, technological equipment and tool systems
(course title)

COURSE SYLLABUS ABSTRACT

1-40 05 01 Information systems and technologies (majors in)
(speciality code and name)

1-40 05 01-01 Information systems and technologies (in designing and producing)
(specialisation code and name)

	STUDY MODE		
	full-time	part-time	part-time (shortened program)
Year	3, 4	4	2, 3
Semester	6, 7	7, 8	4, 5
Lectures, hours	62	14	14
Laboratory classes, hours	62	14	14
Course project, semester	7	8	5
Exam, semester	6	7	4
Pass/fail, semester	7	8	5
Contact hours	124	28	28
Independent study, hours	104	200	200
Total course duration in hours / credit units	228/6		

1. Course outline

Main units and mechanisms of process equipment. Metal cutting machine as a process system. CNC lathes. Drilling, boring, milling, toothworking, drawing, planing and running machines. Cutters, broaching, piercing, cutters. Hole tools. Tools for thread formation. Tools for machining teeth of cylindrical, conical wheels.

2. Course learning outcomes

Upon completion of the course, students will be expected to

know**:** basic processes during metal cutting; ways of intensifying and controlling the cutting process; features of various machining processes (turning, milling, grinding, etc.); technological capabilities of the equipment; structures of its main units; principles of equipment adjustment for basic operations; features of equipment structures for different types of processing; basic design principles for metal cutting equipment; principles of construction of automatic lines and flexible production systems; features of structures of the main types of cutting tools; requirements for operation of cutting tools;

be able to**:** use cutting process regularities to calculate the cutting tool; assess the serviceability of the cutting tool; Optimize the cutting process perform kinema-tic adjustment and adjustment of equipment; Select equipment for workpiece processing design equipment; evaluate technical and economic indicators of metal-cutting equipment; develop the terms of reference for the metal-cutting equipment control system; Select the materials and design of the cutting tool. evaluate the characteristics of the cutting tool during its operation; design a cutting tool using CAD features of the structures of the main types of cutting in-tools; requirements for operation of cutting tools.

possess**:** methodology of calculation of cutting modes for various processes of machine parts machining; skills of evaluation of the cutting tool operability under the specified part processing conditions, optimization of these conditions; methods of increasing intensification and regulation of cutting processes; methods for designing kinematic diagrams, general arrangement of individual units of metal-cutting equipment taking into account their purpose and the adopted control system; skills in assessing the performance of metal-cutting equipment in production conditions; methods of predicting reliability of metal-cutting equipment, development of technical specifications for their operation; scientific basis of design of cutting tools with specified characteristics.

3. Competencies

SK-6 – Own the basis for the design of mechanisms, machines, technological equipment and technological processes of machine-building production.

4. Requirements and forms of midcourse evaluation and summative assessment

– verbal-written: laboratory protection, academic year project, test, exam.