

AUTOMATED SYSTEMS FOR TECHNOLOGICAL PREPARATION OF PRODUCTION

(course title)

COURSE SYLLABUS ABSTRACT

Speciality: 1-53 01 01 – «Automation of technological processes and production».

Specialisation 1-53 01 01-01 – Automation of technological processes and production (mechanical engineering and instrumentation)

	STUDY MODE
	full-time
Year	4
Semester	7, 8
Lectures, hours	62
Practical classes (seminars), hours	56
Course project, semester	8
Exam, semester	7, 8
Contact hours	118
Independent study, hours	112
Total course duration in hours / credit units	230/6

1. Course outline.

The purpose of the discipline "Automated systems of technological preparation of production" is to study the principles of construction and structure of computer-aided design of technological processes (CAD TP), as well as the training of specialists who own modern methods of automation of the design of technological processes and means of automation of production using electronic computers to solve the actual problems of mechanical engineering - reducing the time, labor intensity and improving the quality of technological preparation of production (TPP).

2. Course learning outcomes.

As a result of mastering the academic discipline, the student should

know:

- tasks of technological preparation of machine-building production and methods for their solution using automated systems;
- classification of computer-aided design systems;
- composition and structure of CAD;
- functional subsystems of CAD;
- modern terminology in the field of automation of design of technological processes;
- modern systems of computer-aided design of technical objects and their features;
- basic techniques for automating the design of technological processes and automation equipment for mechanical assembly

production;

- methods for setting tasks for computer-aided design of various design procedures, operations, their formalization and algorithmization;

- methodology of work in the CAD TP environment, having different levels of design automation;

- methods of structural and parametric optimization of technological processes;

- a methodology for automating programming in the CAM environment of systems of technological operations performed on

CNC machines;

be able to:

- to design in the environment of modern CAD TP technological processes of varying degrees of detail description based on generalized technological processes;

- configure databases and knowledge bases of CAD TP for automated solution of logical and computational design problems;

- perform the formulation and algorithmization of the main tasks of designing technological processes and automation equipment for mechanical assembly production;

- to program in the environment of CAM (Computer Aided Manufacturing) systems technological operations performed on CNC machines;

possess:

- skills in creating in the CAD environment (Computer Aided Design) systems of two-dimensional and three-dimensional geometric models of production facilities and automation tools for mechanical assembly operations;

- principles, methods and rules for using integrated programming systems to automate design procedures for modeling and analyzing objects of automation equipment for mechanical assembly production;

- methods of automation of design, modeling and digital prototyping of automation equipment for mechanical assembly production;

- skills in using basic CAD software in the development of automated design procedures for designing, modeling and analyzing automation tools for mechanical assembly operations.

3. Competencies.

Mastering this academic discipline should ensure the formation of the following competencies:

CK-14.3: Know the methods of machine design of technological processes, representation and information about the part and process in a computer, search for an analogue in databases, design of route and operational technological processes of mechanical assembly production.

4. Requirements and forms of midcourse evaluation and summative assessment.

To assess the level of knowledge of students, the following diagnostic tools are used: written reports on practical work with their oral defense; passing an exam, completing a course project with its defense.