«DEVELOPMENT TRENDS FOR MODERN PRODUCTION EQUIPMENT AND TOOLING FOR MACHINE MANUFACTURING»
ANNOTATION
TO THE CURRICULUM OF A HIGHER EDUCATION INSTITUTION

Specialty 7-06-0714-02 – "Innovative technologies in mechanical engineering" of the second stage of higher education (Master's degree)

	Form of higher education	
	Full-time (day)	Correspondence
Course	1	2
Term	2	3
Lectures, hours	50	10
Practical classes, hours	34	8
Exam, semester	2	3
Classroom hours for the academic discipline	84	18
Independent work, hours	240	306
Total hours of academic discipline / credits	324/9	324/9

1. Summary of the academic discipline

The purpose of studying the discipline is to acquire knowledge and theoretical foundations in the fields of modern science of mechanical engineering technology and technological equipment related to robotics and technological equipment for the manufacture of machines.

2. Learning outcomes

As a result of mastering the discipline, the student should know:

–the main sources of scientific and technical information on robotic systems;

– theoretical foundations of the design of robots and robotic systems;

– requirements for the functional characteristics of technological modules and machines: characteristics of kinematics and dynamics, accuracy of movement of working bodies of machines and mechanisms of the systems under study;

– theory and practice of new ways of processing machine parts;

– regularities of occurrence of processing errors, ways and methods of their elimination and reduction;

– the influence of various factors on the characteristics of the manufacturing quality of machine parts and mechanisms and their operational properties;

– methods of studying the quality of machine parts processing;

– methods for evaluating the accuracy of mechanical gears and machine mechanisms;

– methods of mathematical processing and statistical analysis of experimental data.

Having studied the discipline, the student should be able to:

– independently understand the normative methods of calculation and design of robotic systems;

– design and calculate elements of robotic devices.

– theoretically and experimentally evaluate the accuracy of mechanical gears and machine mechanisms;

– design and calculate elements of modern equipment for robotic devices and metal-cutting machines.

– perform analysis and calculations of the main types of processing errors;

– evaluate and calculate the influence of various factors on the quality characteristics of the manufacture of machine parts and mechanisms;

– perform mathematical processing and statistical analysis of experimental data.

A student who has studied the discipline must have the skill:

– basic concepts and terminology in the field of mechanical engineering and machine science;

– skills in using technical reference literature for literary analysis and patent search;

– methods of designing robotic devices and technological equipment using new methods of manufacturing and control of machine parts and mechanisms.

3. Formed competencies

SK-1 Possess information about progressive designs of metal-cutting equipment and tools, trends in their development.

4. Requirements and forms of current and interim certification

Current and intermediate attestation are carried out in written and oral-written form by performing control works, assignments in practical classes, passing the exam.