THEORY OF MECHANISMS AND MACHINES
(course title)

COURSE SYLLABUS ABSTRACT

Specialty **1-36 01 03 "Technological equipment of machine-building production"**

	full-time
Year	2,3
Semester	4,4
Lectures, hours	50
Practical classes (seminars), hours	16
Laboratory classes, hours	16
Course paper, semester	5
Exam, semester	4
Contact hours	82
Independent study, hours	134
Total course duration in hours / credit units	216/6

1. Course outline

The objectives of the discipline are to study the basic concepts of the theory of mechanisms, machines and manipulators, the basics of the structure of mechanisms, numerical methods in solving equations of motion, force analysis, friction and wear in mechanisms, synthesis of lever, cam, gear mechanisms, intermittent motion mechanisms, control systems of automatic machines, the structure of manipulators and industrial robots, kinematic and dynamic analysis of manipulators; study of the movement of machines and mechanisms with rigid and elastic connections.

2. Course learning outcomes

to know:

– the main theoretical provisions of the structure, kinematics, dynamics and control of individual machines and mechanisms, taking into account the conversion and transfer of energy;

– features of experimental determination of kinematic and dynamic parameters of mechanisms and machines;

– principles of designing mechanisms of the main types;

be able to:

– make calculation schemes (models) of machines and mechanisms suitable for solving technical problems arising at various stages of machine design, performing kinematic and dynamic calculations;

– apply the results of calculations to obtain optimal characteristics of mechanisms and machines in terms of their energy intensity and energy consumption;

– develop algorithms for calculating parameters on a computer, perform specific calculations;

possess:

– skills of structural, kinematic and dynamic analysis of mechanisms and machines from the standpoint of their rationality, the correctness of the methods used in this case;

– the ability to apply the general laws of synthesis and analysis of mechanisms and machines obtained in the study of the theory of mechanisms and machines directly in the study and design of special machines and mechanisms;

– readiness to develop well-known algorithms for the synthesis and analysis of technical devices.

3. Competencies

BPK -11 – be able to design mechanical engineering parts and products in accordance with the terms of reference, providing the necessary strength and durability of structures, using standard methods and automation tools.

4. Requirements and forms of midcourse evaluation and summative assessment

- written;

– oral; oral-written.

– interviews;

–reports on practical classes;

–reports on classroom practical work with their oral defense;

–reports on home practical work with their oral defense.