

THEORY OF MECHANISMS AND MACHINES

(course title)

COURSE SYLLABUS ABSTRACT

Specialty 1-36 07 02 "Production of products based on three-dimensional technologies"

	STUDY MODE
Year	2
Semester	4
Lectures, hours	50
Practical classes (seminars), hours	16
Laboratory classes, hours	16
Exam, semester	4
Independent study, hours	82
Contact hours	48
Total course duration in hours / credit units	130/3

1. Course outline

The objectives of the discipline are the basics of the structure of mechanisms; modeling of geometric and kinematic connections in mechanisms; mathematical modeling of the movement of machines and mechanisms with rigid connections, the use of numerical methods and computers to solve equations of motion; force analysis, friction and wear in mechanisms; assessment of energy consumption and dynamic loading of machines and mechanisms; study of the movement of machines and mechanisms with elastic links; vibrations in mechanisms and machines; synthesis of lever, cam, gear mechanisms, intermittent motion mechanisms; the structure of automatic machines; control systems of automatic machines and their design.

2. Course learning outcomes

to know:

- the basic theoretical provisions of the structure, kinematics, dynamics and control of machine systems, individual machines and mechanisms, their components, taking into account the conversion and transfer of energy, materials and information;
- measuring equipment for determining the kinematic and dynamic parameters of mechanisms and machines;
- fundamentals of the structure of mechanisms;

be able to:

- make calculation schemes (models) machines and mechanisms suitable for solving technical problems arising at various stages of machine design;
- develop algorithms for calculating parameters on a computer, perform specific calculations;
- to conduct research on the movement of machines and mechanisms with elastic links;

possess:

- the principles of designing the main types of mechanisms;
- kinematic and dynamic calculations;
- calculations to obtain optimal characteristics of mechanisms and machines in terms of their energy intensity and energy consumption.

3. Competencies

БПК-7– обладать навыками построения и расчета динамических моделей механизмов и машин.

4. Requirements and forms of midcourse evaluation and summative assessment

- oral; oral-written.
- interviews;
- oral exams;
- reports on laboratory work with their oral defense;
- reports on classroom practical work with their oral defense;
- reports on individual tasks with their oral defense.