

THEORY OF MECHANISMS AND MACHINES

(course title)

COURSE SYLLABUS ABSTRACT

1-37 01 02 "Automotive" (by direction)
(speciality code and name)

1-37 1 02 01 "Automotive" (mechanics)
(specialisation code and name)

	STUDY MODE
	full-time
Year	2
Semester	4
Lectures, hours	34
Practical classes (seminars), hours	34
Laboratory classes, hours	16
Exam, semester	4
Contact hours	84
Independent study, hours	60
Total course duration in hours / credit units	144/4

1. Course outline

The objectives of the educational discipline are the foundations of the structure of mechanisms; modeling of geometric and kinematic links 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 power consumption and dynamic heating of machines and mechanisms; study of movement of machines and mechanisms with elastic links; wi-walkie-talkies in mechanisms and machines; synthesis of lever, cam, gear mechanisms, prairie movement mechanisms; structure of automatic machines; control systems of automatic machines and their design.

2. Course learning outcomes

Upon completion of the course, students will be expected to know:

- the main theoretical provisions of the structure, kinematics, dynamics and control of machine systems, individual machines and mechanisms;
- measuring equipment for determination of kinematic and dynamic parameters of mechanisms and machines;
- principles of design of the main types of mechanisms;

be able to:

- draw up design diagrams (models) of machines and mechanisms suitable for solving technical tasks, performing kinematic and dynamic calculations, apply calculation results to obtain optimal characteristics of mechanisms and machines;

- develop algorithms for calculation of parameters on PC, perform specific calculations;

possess:

- basic principles of design, analysis and synthesis of various mechanisms;
- design methods for the main types of mechanisms;
- methods of calculation of dynamic loading of machines and mechanisms.

3. Competencies

BPK-6. Perform and analyze kinematic diagrams of mechanisms and machines to apply the main theoretical positions of kinematics and dynamics for analytical study of mechanisms and machines.

4. Requirements and forms of midcourse evaluation and summative assessment

- oral and written survey during practical training;
- performance of control works (test tasks) on individual topics;
- protection of performed RGR within the framework of independent work;
- protection of laboratory works;
- passing the exam.