# THEORY OF MECHANISMS AND MACHINES

(course title)

## COURSE SYLLABUS ABSTRACT

Specialty **1-37 01 07 – "Car service"**

| | STUDY MODE | |
|---|---|---|
| | **full-time** | **part-time (shortened program** |
| Year | 2 | 2 |
| Semester | 3 | 4 |
| Lectures, hours | 34 | 6 |
| Practical classes (seminars), hours | 16 | 4 |
| Classroom control work | – | 4,(2 hours) |
| Exam, semester | 3 | 4 |
| Independent study, hours | 50 | 12 |
| Contact hours | 58 | 96 |
| Total course duration in hours / credit units | 108/3 | 108/3 |

**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;

- measuring equipment for determining the kinematic and dynamic parameters of mechanisms and machines;

– principles of designing the main types of mechanisms;

be able to:

– make calculation schemes (models)machines and mechanisms suitable for solving technical problems, performing kinematic and dynamic calculations, apply the results of calculations to obtain optimal characteristics of mechanisms and machines;

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

possess:

– basic principles of design, analysis and synthesis of various mechanisms;

– methods of designing the main types of mechanisms;

– methods of calculating the dynamic loading of machines and mechanisms.

**3. Competencies**

BOD -9 – Be able to analyze the operation of mechanisms and carry out the necessary calculations when designing them.

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

– oral; oral-written.

– interviews;

–reports at seminars;

–reports on classroom practical work with their oral defense;

–reports on home practical work with their oral defense.