THEORY OF MECHANISMS AND MACHINES
(course title)

COURSE SYLLABUS ABSTRACT

Specialty 1-37 01 06 "Technical operation of cars" (by directions)

	STUDY MODE		
	full-time	**part-time**	**part-time (shortened program**
Year	2	3	2,3
Semester	3	5	4,5
Lectures, hours	34	6	6
Practical classes (seminars), hours	16	4	6
Classroom control work	–	5, (2 hours)	4,. (2 hours)
coursework	4	5	5
Exam, semester	3	5	4
Independent study, hours	50	12	12
Contact hours	86	124	124
Total course duration in hours / credit units	136/3,0		

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 of PTM and SDM;
– methods of designing the main types of mechanisms;
– methods of calculating the dynamic loading of machines and mechanisms.

3. Competencies

АК-1– be able to apply basic scientific and theoretical knowledge to solve theoretical and practical problems;
АК-2– possess system and comparative analysis;АК-3– владеть исследовательскими навыками;
АК-4– be able to work independently;
АК-4– be able to generate new ideas
АК-6– possess an interdisciplinary approach to solving problems;
АК-7– have skills related to the use of technical devices, information management and computer work;
АК-8– have oral and written communication skills;
АК-9– be able to study, improve their skills throughout their lives;
СЛК-5– be capable of criticism and self-criticism (critical thinking);
СЛК-6– be able to work in a team;
ПК-2– prepare organize work to improve the skills of employees of a motor transport organization;
ПК-10– master the basics of industrial relations and management principles taking into account technical financial and human factors;
ПК-24– make engineering decisions to improve the structure of the production and technical base of road transport organizations and optimize logistics;
ПК-25– to provide inspection of technological equipment of the motor transport organization in due time, to carry out operational measures;
ПК-31 – identify the causes of downtime of vehicles, work posts and production units, individual performers, keep records of them, develop proposals for their prevention.

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.