

THEORETICAL MECHANICS

COURSE SYLLABUS ABSTRACT

TO THE CURRICULUM OF THE INSTITUTION OF HIGHER EDUCATION

Speciality1-70 03 01 Highways

	STUDY MODE		
	full-time	part-time	part-time (shortened program)
Year	1, 2	2	2
Semester	2, 3	3, 4	3, 4
Lectures, hours	68	16	16
Practical classes (seminars), hours	50	12	12
In-class test (semester, hours)	-	3 (2 hours)	3 (2 hours)
Pass/fail exam, semester	3	4	4
Exam, semester	2	3	3
Contact hours	118	30	30
Independent study, hours	110	198	198
Total course duration in hours / credit units	228/6		

1. Course outline

The main objective of the discipline is to teach students the methods of theoretical mechanics for their application in engineering practice in mathematical modeling, design, calculation and forecasting of technical objects, systems and processes

2. Course learning outcomes

Upon completion of the course, students will be expected to

know:

- basic concepts and laws of mechanics;
- basic theoretical positions of statics, kinematics and dynamics of a material point and a mechanical system;
- fundamentals of methods for calculating static and dynamic systems, components and mechanisms of machines;

be able to:

- develop independence and a creative approach to the problem of setting tasks and choosing the optimal engineering method for its solution;
- apply the basic laws and theorems of mechanics to solve applied engineering problems;
- use fundamental and special technical literature;

possess:

- the ability to analyze specific tasks to choose rational methods for their solution;
- the ability to represent mechanical systems of any complexity in the form of the simplest abstractions and their aggregates, by methods of formalization of working processes of machines;
- the methodology for determining the main parameters of movement (interaction, functioning) of mechanical objects;
- laws and methods of mechanics for constructing mathematical models of dynamic systems, analysis of complex dynamic systems, including optimization of their parameters.

3. Competencies

Mastering this course should ensure the formation of the basic professional competence of BPC-9: To apply the laws of kinematics and dynamics while performing practical calculations.

4. Requirements and forms of midcourse evaluation and summative assessment

To assess current academic performance, a written form is used (test papers, individual assignments), and for intermediate - oral-written (Exam, Pass/fail exam).