

FOUNDATIONS OF THE THEORY OF ELASTICITY AND FEM
(course title)

COURSE SYLLABUS ABSTRACT

6-05-0715-03 «Cars, tractors, mobile and technological systems»
(speciality code and name)

"Computer engineering in hoisting and transport engineering"
(specialisation code and name)

"Computer engineering in construction and road engineering"
(specialisation code and name)

"Computer engineering in the automotive industry"
(specialisation code and name)

	STUDY MODE
	full-time
Year	2,3
Semester	4,5
Lectures, hours	32
Laboratory classes, hours	68
Pass/fail, semester	4,5
Contact hours	100
Independent study, hours	116
Total course duration in hours / credit units	216/6

1. Course outline

The purpose of the academic discipline is to form specialists who can reasonably and effectively apply a set of knowledge, skills and abilities for calculating and analyzing the stress-strain state of parts and structures used in construction, road and hoisting and transport machines

2. Course learning outcomes

Upon completion of the course, students will be expected to

know: the basic equations of the theory of elasticity and the provisions of the mechanics of a deformable body; basic relations of the plane problem of elasticity theory in Cartesian and polar coordinate systems; approximate (numerical and analytical) methods for solving problems; statement of the FEM problem; the main stages of solving the FEM problem; software that implements the FEM

be able to: solve plane problems of elasticity theory by various methods; carry out typical calculations and determine the type of stress state of the body; to form boundary conditions for numerical methods of solution; simulate SSS of metal structures using application software; analyze the results of the calculation of metal structures.

to possess a skill: determination of stresses, deformations and displacements in beams, plates; using tools of approximate methods in solving basic problems of the theory of elasticity; use of application software that implements the finite element method for analyzing the stress-strain state of metal structures when solving design problems.

3. Competencies Carry out calculations for strength, rigidity, stability of structures

4. Requirements and forms of current and intermediate certification.

The form of current certification is the defense of laboratory work. Interim certification form - test.