MACHINE CONTROL SYSTEMS
(course title)

COURSE SYLLABUS ABSTRACT

6-05-0715-03 – Cars, tractors, mobile and technological complexes
Computer Engineering in Construction and Road Engineering

	STUDY MODE
	full-time
Year	**4**
Semester	7
Lectures, hours	16
Laboratory classes, hours	34
Pass/fail, semester	7
Contact hours	50
Independent study, hours	58
Total course duration in hours / credit units	108/3

1. Course outline

The purpose of the discipline is to develop students' knowledge, skills and abilities in designing hydraulic control systems and analyzing the functioning of control systems built on the basis of logical elements and using Boolean algebra, as well as using programmable logic controllers and the Grafcet language.

2. Course learning outcomes

Upon completion of the course, students will be expected to

know:

– logical elements of control systems;
– compilation and simplification of schemes based on Boolean expressions;
– rules for installing control system elements in diagrams;
– principles of construction of hydraulic schemes of construction and road machines;
– device and principle of operation of steering control systems;
– method of calculation of hydraulic control systems;
– principles of energy saving in hydroficated RCM;
- methods for reducing the dynamic and static loading of the RCM;
- the basic rules for diagnosing a hydraulic drive.;

be able to:

- correctly apply the elements of the hydraulic drive and logic elements in the development of hydraulic systems of machines;
- draw up a hydraulic diagram and calculate the hydraulic system of the machine according to the given power parameters;
– optimize the hydraulic system according to the criteria of energy losses;
- diagnose the control system;

to possess a skill:

– methods of calculation of hydraulic control systems;
- methods for reducing the dynamic and static loading of the RCM;
– methods of drawing up and simplifying circuits based on Boolean expressions;
– rules for diagnosing a hydraulic drive.

3. Competencies

Apply knowledge about the design and operating principles of automatic systems and control systems of mobile technological machines.

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

The form of the current attestation is an oral survey. The form of intermediate certification is an pass/fail.