# Electronic Control Systems in Motor Vehicles

## COURSE SYLLABUS ABSTRACT

6-05-0715-07 "Operation of ground transport and technological machines and complexes"
(speciality code and name)

Profiling "Technical operation of vehicles"
(concentration)

| | STUDY MODE | | |
|---|---|---|---|
| | full-time | part-time | part-time (shortenedprogram) |
| Year | 3 | 4 | 3 |
| Semester | 6 | 7 | 6 |
| Lectures, hours | 34 | 6 | 6 |
| Practicalclasses (seminars), hours | 16 | 4 | 4 |
| Laboratory classes, hours | 16 | 4 | 4 |
| Pass/fail, semester | 6 | 7 | 6 |
| Contact hours | 66 | 14 | 14 |
| Independent study, hours | 42 | 94 | 94 |
| Total course duration in hours / credit units | 108 / 3 | | |

1. Course outline

The aim of the academic discipline is to develop knowledge and skills in the field of the design and technical operation of electronic vehicle control systems, knowledge of technical methods for ensuring environmental requirements, economy and safe operation of motor vehicles through the widespread use of microprocessor technology for controlling the engine, units and systems of the vehicle.

2. Course learning outcomes

Upon completion of the course, students will be expected to

**know**:

- modern electronic technical systems;
- fundamentals of the methodology for developing projects and programs for the industry, conducting the necessary activities related to the safe and efficient operation of vehicles for various purposes, their units, systems and elements;
- fundamentals of the methodology for performing work on the standardization of technical means, systems, processes, equipment and materials; fundamentals of the skills of reviewing and analyzing various technical documentation;
- typical electronic units and devices of injection systems, their unification and interchangeability;
- general provisions on the design of electronic injection systems;
- internal combustion engines of cars;
- life cycle of large systems and their elements;
- modern methods for diagnosing the state of various systems, devices and instruments of automotive electronic equipment;
- principles of operation and features of actuators used in car control systems;

**be able to:**

- work with modern electronic systems of cars;
- apply resource-saving methods;
- apply knowledge of modern methods of diagnostics of electronic equipment to find faults;
- use methods of calculation of electronic equipment of cars;
- select materials for use in operation and repair of cars taking into account the influence of external factors and requirements of safe and efficient operation and cost;

**to possess a skill**:

- in the field of the design and technical operation of electronic vehicle control systems;
- in methods of analyzing electrical circuits in vehicle control systems;
- in the design and features of operation of vehicle control systems.

3. Competencies

Carry out diagnostics and repair of electrical equipment and electronic systems of vehicles.

4. Requirements and forms of midcourse evaluation and summative assessment

Current certification is a defense of laboratory work, intermediate certification is a credit.