

DESCRIPTION OF THE COURSE

Name of the course: Electrical equipment of the automotive vehicle	Code: BIE69-3	Semester: 6
Type of teaching: Lectures and laboratory work	Lessons per week: L – 1,5 hours; LW – 1,0 hour	Number of credits: 4

COURSE STATUS IN THE CURRICULUM: Optional for the students speciality Industrial Engineering BEng programme of the English Language Faculty of Engineering.

AIMS AND OBJECTIVES OF THE COURSE: The course “Electrical equipment of the automotive vehicle” is aimed to introduce to the students the basic principals and tendencies in electrical equipment of the automotive vehicle, the design, parameters and characteristics of electrical units and assemblies. The content of the course covers all kind of units and assemblies of electrical equipment of cars, tractors and motorcars. At the end of the course the students are expected to be familiar with methods and means for maintenance and diagnosis of the vehicle electrical equipment.

DESCRIPTION OF THE COURSE: Circuit diagram of the vehicle electrical equipment, Electromagnetic compatibility and interference suppression, Requirements, design and chemical processes of lead-acid batteries, Charging and discharging characteristics, Requirements, design and characteristics of the alternators with electromagnetic excitation, Windingless alternators and alternators with permanent magnet excitation, Requirements and principles of voltage regulation, Output characteristic of the alternator working with voltage regulator, Energy balance in vehicle power supply, Electric starting motor, design and characteristics, Preheating devices, Combustion engine ignition requirements. Circuit diagram of the coil ignition system. Basic equation and characteristics. Ignition timing and adjustment, Distributorless ignition systems, Breakless triggering devices, Lighting systems, requirements, arrangements and design, Lights and lamps, requirements, arrangements and design. Parameters and circuit diagrams, Instruments and dashboard displays, Vehicle Electronic management systems.

PREREQUISITES: Physics, Internal Combustion Engines, Electrical Engineering and Electronics.

TEACHING METHODS: Lectures and laboratory works, work in teams, protocols preparation and defence.

METHOD OF ASSESSMENT: Two one-hour tests at mid and end of semester.

INSTRUCTION LANGUAGE: English.

BIBLIOGRAPHY:

1. Tranter A. Automotive electrical and electronic systems. Haynes Publishing, England,1995, ISBN 1 85960 049 2;
2. Automotive Handbook. Bosch, 5-th edition, 2000, ISBN 0-7680-0669-4;
3. Automotive electrical, electronic systems. Bosch Publishing Dept., 1998;
4. Derato Frank C. Automotive ignition systems: Diagnosis and Repair. Mc. Graw-Hill, 1998 ISBN 0-07-016501-7.