

Name of the course: **ELECTROMOBILITY**

Field of study: Automatic Control and Robotics or Electrical Engineering

Level of studies: postgraduate studies

Duration of the course: Lectures – 15 hours, Laboratory – 15 hours (recommended)

Conducting unit: Department of Electrical Engineering of Transport Faculty of Electrical and Control Engineering

Subject supervisor: Ph.D., Eng. Leszek Jarzębowicz, Teachers: Ph.D. Eng. Mikołaj Bartłomiejczyk, Andrzej Wilk, Ph.D., D.Sc., Eng., Associate Professor

Scope of the course:

- Vehicles and energy sources,
- Electromechanical energy conversion,
- Traction machines (The Brushed DC Machine, Induction Machines, Surface-Permanent-Magnet AC Machines, Interior-Permanent-Magnet AC Machine),
- Power electronics, isolated DC-DC converters, traction drives and inverters,
- Control of the electric drive,
- A case study comparison of conventional, hybrid, battery and fuel cell vehicles,
- Battery charging, protection, and management systems,
- Vehicle dynamics, theoretical run calculation,
- Electric urban transportation systems (trams, trolleybuses, electric buses, eBRT systems),
- Electric vehicle networks as energy storage system in the transportation system,
- Autonomous vehicles, networks and data transmission, infrastructure, environment, legal conditions.

Properly adapted lectures for Automatic Control and Robotics or Electrical Engineering.