

Electric Vehicle Propulsion and Control (EPIC)

Contact: Conf. dr. ing. Octaviana DATCU

Prof. Dan-Alexandru STOICHESCU

Email: octaviana.datcu@upb.ro

dan_stoich@yahoo.com



Synthesis

The electric vehicle is no more a symbol of the future; it is already present in our life and the necessity to train specialists in the field is obvious.

The aim of this master program is just to satisfy the society demand for these specialists and its curriculum is a guarantee of its usefulness; after graduating the program, the future masters of science will be able to successfully solve the challenges of manufacturing, maintenance and research in the electric vehicle domain. They have the opportunity to learn about the electric vehicle system fundamentals, modeling and simulation, about electric machines and power electronic converters, having the possibility to master the details of the electric batteries and battery chargers running, battery management systems and energy storage requirements. They'll get knowledge about control systems - continuous and digital, linear and nonlinear.

For related fields, the program is useful, too. The validity of this statement is demonstrated by lectures in Statistical Signal Processing and Estimation Theory, Renewable Energy and Storage Systems, Machine Learning for Autonomous Systems, Microprocessor Applications for Real Time Systems.

For whom is the program intended?

Target group - students from:

- the faculties of Electronics, Telecommunications and Information Technologies, Automatics and Computer Science and Electrical Engineering.
- technical profile, in Romania.

- technical profiles from European and non-European countries.

Master program's objectives:

- increasing the quality of the training of the engineers in electric propulsion.
- stimulating the research in electric propulsion in the University POLITEHNICA of Bucharest.
- collaboration between the University POLITEHNICA of Bucharest and industrials, mainly the representatives of developing automotive engineering (Renault, Continental, electric battery manufacturers, etc).
- connection and collaboration between research teams in the faculties of Electronics, Telecommunications and Information Technologies, Automatics and Computer Science and Electrical Engineering.
- stimulating the research collaboration between ETTI Departments.
- international collaboration.

Specialized competencies offered to program's graduates:

- Professional competences
 - the ability to design and use power electronic converters, electric batteries management systems, electric batteries chargers.
 - finding and optimizing solutions of problems encountered in electric vehicle component block manufacturing and maintenance.
 - the ability to use, in practical situations, basic knowledge, concepts and methods specific to unconventional energy sources, electric system modeling and simulation, statistic signal processing, microprocessors, electrical batteries charging and management.
 - accurately interpreting of electronic circuits running and their mathematical relations in the fields of power electronics, control systems, electrical machines, automotive.
 - skills in elaborating technical documentation, setting up and operating of equipment in the fields of power electronic converters, control systems, electrical machines, renewable energy systems, electrical battery chargers and management.
 - design, using basic established principles and methods, in the field of electric car design and manufacturing.

- Transversal competences

Methodical analysis of problems encountered in activity and identification of already established solutions in order to fulfil professional tasks.

Research directions examples

- Research directions
 - electric vehicle component block development and improvement.
 - electric batteries innovations.
 - power electronic converters and control equipment.
 - unconventional energy sources.
 - electric system modeling and simulation.
 - statistical signal processing.
- Employment examples:
 - electric vehicle component block manufacturing and maintenance.
 - electric batteries manufacturing and management.
 - electric batteries chargers manufacturing and maintenance.
 - electronic converters, electric machines and control equipment manufacturing and maintenance.