

Engineering of Electrical Systems Integrated in Vehicles

1. Admission Requirements:

• Prerequisites:

- Graduates with a bachelor's degree from a bachelor's degree course or graduates with an equivalent degree from a long-term university course may apply for admission to the master's degree course.
- Non-EU Citizens - Contingent upon the presentation of the English Language Proficiency Certificate (excluding those coming from countries where the official language is English) and obtaining the Letter of Acceptance issued by the Ministry of Education.
- EU Citizens + Swiss Confederation - Contingent upon the presentation of the English Language Proficiency Certificate and the recognition of their studies by the National Centre for Recognition and Equivalence of Diplomas (CNRED).

Entrance Exams:

- The admission process includes a structured interview on a predetermined topic.
- Admission to the Master's programmes, both for free and fee-based studies, is strictly in descending order of the admission averages obtained by the candidates, within the limit of the places for which the admission competition is organised.

2. Degree Levels:

- Master's Degree: 2-year program following a bachelor's degree.

3. Curriculum:

• Core Courses:

Mandatory courses that all students in the program must take:

- Development and Management of Object Oriented Software Projects;
- Systems Engineering Management;
- Electromagnetic Compatibility in Distributed Systems;
- Vehicle Dynamics and Mechanics;
- Interconnecting Devices and Interfaces;
- Sensors and Transducers for Vehicles;
- Electric Propulsion Systems for Vehicles;
- Vehicle Architecture; Security and Functional Safety of Vehicle Electrical Systems;
- Numerical Simulation of Embedded Systems;
- Modelling, Simulation, Programming and Testing of Integrated Electromechanical Systems;
- Materials, Specific Technologies and Vehicles Environmental Impact;

- Integrated Data Acquisition Systems;
- Risk Management in Electrical Power Systems;
- Diagnosis of Electric Machines;
- Data Acquisition and Control System for a Vehicle;
- Car Video Simulation Based on the UNITY Graphics Engine;
- Wireless Charging Station for Electric Vehicles;
- Neural Algorithms for Shape Recognition;
- Modeling and Simulation of Integrated Micro-Systems.

• **Electives:**

- Modernisation of Electricity Systems.
- Advanced Electric Shareholder Management.
- Intelligent Switching Equipment.
- Computer-Aided Design of Electrical Installations.

• **Major/Concentration:**

- Analysis of methods for assessing, analysing and optimising the reliability of electrotechnical equipment, the design and operation of electrical and power installations, the use of complex electrical equipment and systems, their design, manufacturing technology and installation.
- The main supporter of the program is the Renault Romania Group.

• **General Education Requirements:**

- Successful completion of the mandatory courses, seminars and labs, completion of the three internships and the dissertation thesis.

4. **Credits:**

- Each semester carries a weight of 30 ECTS, with a total of 120 ECTS required for graduation.

5. **Internships and Practical Experience:**

- Professional practice and research are present in all 4 semesters and is credited with 40 ECTS.
- Students could carry out their internship in companies and enterprises in Dambovită county and its surroundings, as well as in the teaching and research laboratories of the faculty or the Institute for Scientific and Multidisciplinary Research.
- Scholarships; Erasmus scholarships for study and research internships abroad; Participation in seminars, symposia, conferences; Ethics and academic integrity; Psycho-pedagogical training - level 2 (optional); Continuing studies to become a Doctor of Engineering.

6. **Research Requirements:**

- The scientific research activity is present in all 4 semesters and is credited with 40 ECTS. Also, in the last semester, students carry out research internships as well as research for the completion of their dissertation.
- Master's students are actively engaged in leading companies both nationally and internationally, fostering crucial connections and shouldering responsibilities in the dynamic realm of power electronics and electric drive systems. Some of our notable partner companies include Group Renault Romania, Expleo Group, FEV ECE Automotive, Schneider Electric România SRL, Siemens SRL, NXP Semiconductors, Thales Group, Eaton Electric SRL, Continental AG, SEGULA Technologies Group, and ICPE S.A.
- The competencies acquired through our program are substantial, as students tackle intricate research-design challenges within the domain of electrical systems integrated into vehicles. Utilizing dedicated professional software and hardware, our graduates develop a profound understanding of systems engineering, particularly as applied to the automotive industry. This is a comprehensive program that integrates multidisciplinary knowledge from energy, electrical, electronic, communication, and mechanical systems.
- Throughout the program, students gain practical expertise in vehicle-specific electrical systems engineering, spanning electrical, mechanical, electronic, communications, materials, advanced control, and system modeling. Our curriculum is designed to equip graduates with the diverse skill set demanded by the evolving landscape of the automotive sector.
- Strategic partnerships are a cornerstone of our program. Collaborating with key players in the automotive industry and research and development, such as Renault Technologie Roumanie and IBM Romania – Academic Initiative, ensures our students are at the forefront of innovation. Târgoviște City Hall is also a vital partner, actively supporting the Electric Vehicle Research Center in sustainable land projects and activities.
- Our commitment to industry integration is unparalleled. From master courses and scientific events to consultancy and research projects, our students are exposed to real-world challenges. This level of engagement renders our graduates highly sought-after in Romania, making them top choices for recruitment by leading companies in the country.

7. Academic Advising:

- A supervising teacher is assigned to each year of study and partially assisted activities are coordinated by supervising teachers.
- The semester research is conducted under the guidance of two coordinating professors.
- The dissertation thesis is also supervised by a scientific supervisor.

8. Extracurricular Activities:

- Students have the option to participate in clubs, organizations, or extracurricular activities related to their field of study or personal interests.

9. Examinations:

- The courses will span 14 weeks during each semester and conclude with oral, written, or practical examinations. Successful completion of these exams is mandatory to earn study credits.

10. Thesis Defense:

The prerequisites for presenting a dissertation thesis before a committee include:

- Attainment of 120 ECTS credits throughout the program.
- Obtaining the approval of the scientific supervisor to present the dissertation thesis.

11. Graduation Requirements:

- Graduation necessitates the fulfilment of all program requirements, encompassing the completion of the required credit hours and the successful completion of the dissertation thesis.

12. Degree Awarding:

- Master's Degree in Electrical Systems Integrated in Vehicles.