

BROCHURE FOR STUDENT ENROLLMENT

**University of Pristina with temporary
headquarters in Kosovska Mitrovica -
Faculty of Technical Sciences in
Kosovska Mitrovica**



PROMOTION AND POLUPARIZATION OF ELECTRICAL MOBILITY

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1. Basic information about the University

The University of Pristina with its temporary headquarters in Kosovska Mitrovica is a state university, where about 9,000 students' study at all levels of study. The University employs 794 teachers and teaching assistants, as well as 368 administrative and professional associates. The university functions as part of the education system of the Republic of Serbia and is a member of the Conference of Universities of Serbia.



The organization of the University is regulated in accordance with the Law on Higher Education of the Republic of Serbia and the Statute of the University, as well as with other relevant normative acts. The governing body of the University is the University Council, which has 19 members (10 faculty representatives, six founder representatives and three student representatives). The work of the Council is managed by the President of the Council, who is elected from among the faculty representatives.

The Government of the Republic of Serbia invests significant funds in the development of our university. In addition to the continuous monitoring of the daily needs of the University regarding the regular development of the teaching process, we also think about the future. The best example of this is the construction of the University building, which will be a symbol of youth, success and the presence of our country in these areas in every aspect, architecturally, functionally and symbolically.

The mission of the University of Prishtina is to enable the achievement of the highest academic standards and ensure the acquisition of the highest quality knowledge and skills through education, scientific research work and participation in the development of the social community as a whole. The University of Pristina, with its history and number of students, represents the most important higher education institution in the area of AP KiM and as such has a very important role in the system of higher education in the Republic of Serbia, with a significant impact on economic, social and cultural development, as well as the development of society as a whole.

2. Basic information about the FTS KM

The Faculty of Technical Sciences in Kosovska Mitrovica was founded by the Government of the Republic of Serbia by the Decision on the establishment of the Faculty of Technical Sciences in Kosovska Mitrovica and on the abolition of the Faculty of Electrical Engineering in Priština, the Faculty of Mechanical Engineering in Priština, the Faculty of Civil Engineering and Architecture in Priština and the Faculty of Mining and Metallurgy in Kosovska Mitrovica, on 19. October. 2001 ("Official Gazette of RS" no. 60/2001).



The Faculty of Technical Sciences is a higher education institution and higher education unit of the University of Prishtina with the status of a legal entity. The name of the faculty is: University of Pristina, Faculty of Technical Sciences. The seat of the faculty is in Kosovska Mitrovica, ul. Kneza Milosa no. 7. The abbreviated name of the faculty is FTS. In business correspondence, the faculty also uses the name in English: University of Pristina, Faculty of Technical Sciences. The faculty is registered in the court register of the Commercial Court in Pristina with headquarters in Kraljevo, no. registration cartridge FN. 252/01 of 11.12.2001. years. Faculty Day is October 19, marking the day the faculty was founded.



The Faculty of Technical Sciences, in accordance with the work permit, realizes academic and professional study programs, conducts educational courses with the aim of lifelong education and other forms of studies for innovation of knowledge and professional education and training, realizes and develops scientific research and

professional work in within the scientific areas for which it is accredited. Prominent teachers from other universities of the Republic of Serbia are engaged in the teaching process at the Faculty of Technical Sciences.



| | |
|---|---|
| Name of the study program: | Electrical and computer engineering |
| Higher education institution where the study program is conducted: | University of Pristina with temporary headquarters in Kosovska Mitrovica Faculty of Technical Sciences in Kosovska Mitrovica |
| Educational - scientific/educational - artistic field: | Technical and technological sciences |
| Scientific, professional or artistic field: | Electrical and computer engineering |
| Level of study: | Basic academic studies |
| Volume of studies expressed in ESPB points: | 240 |
| Title of the degree: | Bachelor of Electrical Engineering and Computing |
| Length of study | 4 years, (8 semesters)4 године |
| Language in which the study program is conducted | Serbian |
| Study modules: | 1. Electric power 2. Electronics and telecommunications 3. Computing and informatics |
| Year the program was accredited: | 2008 (first accreditation) 2012 (change of accreditation certificate and transition to four-year studies) 2014 (second accreditation) 2017 (amendment of the accreditation certificate - increase in the number of students) 2021 (current accreditation) |
| Web address where information about the study program can be found: | https://ftn.pr.ac.rs/ |

Web адреса на којој се налазе подаци о
студијском програму:

<https://ftn.pr.ac.rs/>

3. DESCRIPTION OF THE STUDY PROGRAM

The name of the study program is Electrical and Computer Engineering. The study program Electrical and Computer Engineering was created on the basis of modern scientific knowledge in the field of electrical engineering and computer science, on the basis of similar study programs of leading universities in the world. It is aligned with the Bologna recommendations, the Strategy of Scientific and Technological Development of the Republic of Serbia, the Law on Higher Education of the Republic of Serbia and the standards and instructions of the National Accreditation Body.

3.1 Structure of the study program

The Electrical and Computer Engineering study program was created on the basis of modern scientific knowledge in the field of electrical engineering and computing, based on similar study programs of leading universities in the world. It is harmonized with the Bologna recommendations, the Strategy of Scientific and Technological Development of the Republic of Serbia, the Law on Higher Education of the Republic of Serbia and the standards and instructions of the National Accreditation Body.

Teaching in basic academic studies lasts 4 years, i.e. 8 semesters. The preparation of the final (diploma) thesis is scheduled in the eighth semester. Each semester carries 30 ESPB, so that after completing the studies, the student achieves a total of 240 ESPB.

The outcomes of the learning process include knowledge, skills and competences for effective problem solving in engineering practice, use of professional literature and enabling the continuation of studies at master's academic studies, in case the students decide to do so.

The Electrical and Computer Engineering study program has three modules (study groups):

1. Electric power (EN), within which material from the field of production, transmission, distribution and use of electricity is studied.
2. Electronics and telecommunications (ET), within which material from the fields of electronics, telecommunications, information systems and television technology is studied.
3. Computer Science and Informatics (RI), within which material from the field of computer technology, information technology and software engineering are studied.

The first two semesters of study are common to all three modules. Students within the chosen module have compulsory and optional subjects. Compulsory subjects provide necessary and basic knowledge. Elective courses are chosen from the list of proposed courses, which gives students the opportunity to further profile themselves within the chosen study module. Professional practice is mandatory and is carried out during the eighth semester.

3.2 Objectives of the study program

The purpose of this study program is to educate students for the profession of a graduate engineer in electrical engineering and computer science in accordance with the needs of the economy, the knowledge-based economy and society as a whole.

The Electrical and Computer Engineering study program is designed to ensure the acquisition of competencies that a graduate in electrical engineering and computer science should possess within all three optional modules: Power Engineering, Electronics and Telecommunications, and Computing and Informatics. The important role of all actors in this study program is the education of engineers ready to actively participate in regional development, responsible for maintaining Serbia's high technological and research potential in the fields of electrical engineering and computing.

The study program is organized in such a way that it can easily respond to possible changes in the demands of the labor market, and offer competent engineers to work in various sectors of industry, public and private companies, such as: production, transmission and distribution of electricity, mining, transport, production of electrical



devices, telecommunications, television, information technology, software industry, large business systems as IT and software support, education, government institutions, etc.

3.3 Outcomes of the study program

The outcomes of the learning process include knowledge, skills and competencies for effective problem solving in engineering practice, use of professional literature and enabling the continuation of studies at master's academic studies, in case the students decide to do so.

3.4 Title of diploma

Since 2012, a new curriculum has been introduced at the Faculty of Technical Science, according to which bachelor studies last for four years, i.e. eight semesters. This means that the FTS opted for the 4+1 scheme, according to which after four years of study the title of graduate engineer of electrical and computing engineering is obtained, and after another additional year the title of graduate engineer - master of electrical and computing engineering in accordance with the new Law on Higher Education and the principles of the Bologna Declaration.

3.5 Conditions for enrolment in the study program

Candidates who have completed a four-year high school can apply for enrollment in the first year of the study program. All educational profiles are acceptable for enrollment in the study program. A necessary condition for enrollment is passing the entrance exam in mathematics.

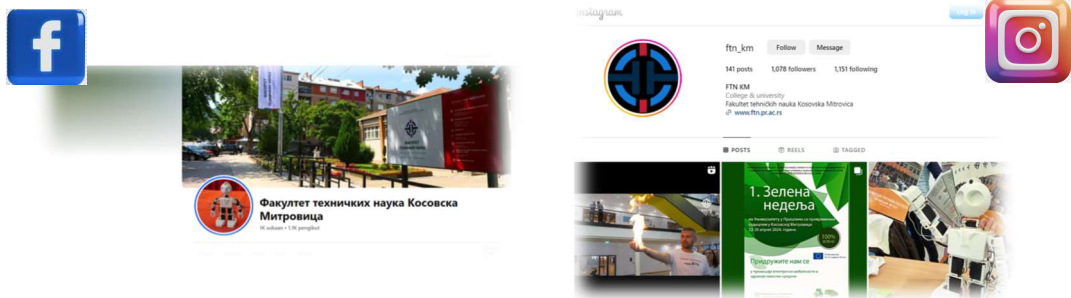
3.6 Study programme of basic academic studies

All student activities are scored according to the ECTS credit system, so that each semester brings 30 ECTS credits. In the last, eighth semester, the student is required to do a professional internship that carries 3 ECTS credits, study research work on theoretical basics of the diploma thesis that carries 3 ECTS credits and a final thesis that carries 4 ECTS credits, which carries 10 ECTS credits. Two semesters make up one school year. Each semester lasts 15 weeks, which includes classes and dates for the colloquium. The school year begins on October 1 and ends on September 30 next year.

Classes are taught by courses, which according to the curriculum must be one-semester. In all courses, students' pre-examination activities, such as colloquia and homework, are performed during the semester in which the course taught. In the

structure of the total number of points, at least 30 and at most 70 points must be provided for activities and knowledge tests during the semester. A total of 100 points are earned by fulfilling pre-exam obligations and taking exams. Final exams are taken in the appropriate exam deadlines, which are: January, April, June, August and September.

3.7 Representation of FTS KM on social networks



<https://www.facebook.com/upisiftnmk>

https://www.instagram.com/ftn_km/



<https://www.youtube.com/channel/UCR37LLNeAGv1DETwX7IjrzA>

3.8 A list of compulsory and elective courses

Table 1 The first year – Common basis - Bachelor academic studies in Electrical and Computing Engineering

| Num. | Code | Name of course | Sem. | ECTS | Status | Type |
|--|---|--|------|------|----------|------|
| The first year – Common basis - Bachelor academic studies in Electrical and Computing Engineering | | | | | | |
| 1 | 20.OE1 | Mathematics 1 | 1 | 7 | Comp. | GA |
| 2 | 20.OE2 | Fundamentals of Electrical Engineering 1 | | 7 | Comp. | TM |
| 3 | 20.OE3 | Physics | | 5 | Comp. | GA |
| 4 | 20.OE4 | Programming 1 | | 4 | Comp. | AP |
| 5 | 20.OE5 | Laboratory exercises in Physics | | 2 | Comp. | AP |
| 6 | Elective Courses Group 1 (PE ET CEIT). Students choose one of the two courses | | | | | |
| | 20.OE72 | Practicum MATLAB Programming | 1 | 3 | Elective | AP |
| | 20.OE73 | Practicum in computer applications | | 3 | Elective | AP |
| 7 | Elective Courses Group 2 (PE ET CEIT). Students choose one of the two courses | | | | | |
| | 20.OE74 | English Language 1 | 1 | 2 | Elective | GA |
| | 20.OE75 | Russian Language 1 | | 2 | Elective | GA |
| Summary number of ETCS credits for Semester 1 | | | | 30 | | |
| 8 | 20.OE6 | Mathematics 2 | 2 | 7 | Comp. | GA |
| 9 | 20.OE7 | Fundamentals of Electrical Engineering 2 | | 7 | Comp. | TM |
| 10 | 20.OE8 | Programming 2 | | 4 | Comp. | AP |
| 11 | 20.OE9 | Fundamentals of Computer Engineering | | 5 | Comp. | AP |
| 12 | 20.OE10 | Laboratory Exercises in Fundamentals of Electrical Engineering | | 2 | Comp. | AP |
| 13 | Elective Courses Group 3 (PE ET CEIT). Students choose one of the two courses | | | | | |
| | 20.OE76 | Introduction to Electronics | 2 | 3 | Elective | AP |
| | 20.OE77 | Introduction to object-oriented programming | | 3 | Elective | AP |
| 14 | Elective Courses Group 4 (PE ET CEIT). Students choose one of the two courses | | | | | |
| | 20.OE78 | English Language 2 | | 2 | Elective | GA |
| | 20.OE79 | Russian Language 2 | | 2 | Elective | GA |
| Summary number of ETCS credits for Semester 2 | | | | 30 | | |
| Summary number of ETCS credits for Year 1 | | | | 60 | | |

Table 2 The Second year – Bachelor academic studies in Electrical and Computing Engineering

| Elective Area - Module: Power Engineering (PE) | | | | | | |
|--|---|---|------|------|----------|------|
| Num. | Code | Name of course | Sem. | ECTS | Status | Type |
| The Second year – Bachelor academic studies in Electrical and Computing Engineering | | | | | | |
| 1 | 20.OE11 | Electrical Circuit Theory | 3 | 7 | Comp. | TM |
| 2 | 20.OE12 | Electrical Measurements 1 | 3 | 7 | Comp. | AP |
| 3 | 20.OE13 | Materials in Electrical Engineering - Modernize | 3 | 7 | Comp. | SP |
| 4 | Elective Courses Group 5 (PE ET CEIT). Students choose one of the three courses | | | | | |
| | 20.OE80 | Elements of Electronics | 3 | 7 | Elective | TM |
| | 20.OE24 | Object-oriented Programming 1 | 3 | 7 | Elective | SP |
| | 20.OE23 | Numerical Analysis and Discrete Mathematics | 3 | 7 | Elective | GA |
| 5 | Elective Courses Group 6 (PE ET CEIT). Students choose one of the two courses | | | | | |
| | 20.OE81 | English Language 3 | 3 | 2 | Elective | GA |
| | 20.OE82 | Russian Language 3 | 3 | 2 | Elective | GA |
| Summary number of ETCS credits for Semester 3 | | | | 30 | | |
| 6 | 20.OE14 | Electromagnetics | 4 | 6 | Comp. | TM |
| 7 | 20.OE15 | Thermal Process in Power Engineering | 4 | 6 | Comp. | TM |
| 8 | 20.OE16 | Electrical Measurements 2 | 4 | 6 | Comp. | AP |
| 9 | 20.OE17 | Electrical Machines 1 | 4 | 7 | Comp. | TM |
| 10 | Elective Courses Group 7 (PE ET CEIT). Students choose one of the three courses | | | | | |
| | 20.OE83 | Mechanics | 4 | 5 | Elective | TM |
| | 20.OE84 | Introduction to Management | 4 | 5 | Elective | GA |
| | New | Introduction to Climate Change Management | 4 | 5 | Elective | GA |
| Summary number of ETCS credits for Semester 4 | | | | 30 | | |
| Summary number of ETCS credits for Year 2 | | | | 60 | | |

Method of conducting studies - the score of each course expressed in accordance with the European Credit Transfer System (ECTS).

GA - General academic education,

TM - Theoretical – methodological,

SP - Scientific and artistic professional,

AP - Applied professional

Comp. - compulsory course

Elective – elective course

Table 3 The Third year – Bachelor academic studies in Electrical and Computing Engineering

| Elective Area - Module: Power Engineering (PE) | | | | | | |
|--|---------|--|------|------|----------|------|
| Num. | Code | Name of course | Sem. | ECTS | Status | Type |
| The Third year – Bachelor academic studies in Electrical and Computing Engineering | | | | | | |
| 11 | 20.OE29 | Low-voltage Electrical Installations | 5 | 6 | Comp. | SP |
| 12 | 20.OE30 | Electrical Machines 2 | 5 | 6 | Comp. | AP |
| 13 | 20.OE31 | Automatic Control Systems - Modernize | 5 | 6 | Comp. | SP |
| 14 | 20.OE32 | Elements of Power Systems | 5 | 6 | Comp. | SP |
| 15 | 20.OE33 | Power Converters- Modernize | 5 | 6 | Comp. | SP |
| Summary number of ETCS credits for Semester 5 | | | | 30 | | |
| 16 | 20.OE34 | High Voltage Technique 1 | 6 | 6 | Comp. | SP |
| 17 | 20.OE35 | Distributed and Industrial Networks- Modernize | 6 | 6 | Comp. | SP |
| 18 | 20.OE36 | Computer-aided Design in Power Engineering | 6 | 6 | Comp. | AP |
| 19 | 20.OE37 | Electrical Machines 3 | 6 | 7 | Comp. | SP |
| Elective Courses Group 13 (PE). Students choose one of the three courses | | | | | | |
| 20 | 20.OE87 | Practicum - Elements of Power Systems | 6 | 5 | Elective | AP |
| | 20.OE88 | Telecommunications in Power Engineering | 6 | 5 | Elective | AP |
| | New | Internet of Things for Electric Vehicle | 6 | 5 | Elective | AP |
| Summary number of ETCS credits for Semester 6 | | | | 30 | | |
| Summary number of ETCS credits for Year 3 | | | | 60 | | |

GA - General academic education,
 TM - Theoretical – methodological,
 SP - Scientific and artistic professional,
 AP - Applied professional
 Comp. - compulsory course
 Elective – elective course

Table 4 The Fourth Year – Bachelor academic studies in Electrical and Computing Engineering

| Elective Area - Module: Power Engineering (PE) | | | | | | |
|--|--|---|-------------|-------------|---------------|-------------|
| Num. | Code | Name of course | Sem. | ECTS | Status | Type |
| The Fourth Year – Bachelor academic studies in Electrical and Computing Engineering | | | | | | |
| 21 | 20.OE52 | Power Plants | 7 | 5 | Comp. | SP |
| 22 | 20.OE53 | Renewable Energy Sources | 7 | 5 | Comp. | SP |
| 23 | 20.OE54 | Electrical Drives | 7 | 5 | Comp. | SP |
| 24 | 20.OE55 | Power System Analysis 1 | 7 | 5 | Comp. | SP |
| 25 | Elective Courses Group 20 (PE). Students choose one of the two courses | | | | | |
| | 20.OE97 | Technical Automatic Control System in Power Engineering | 7 | 5 | Elective | SP |
| | 20.OE98 | High Voltage Equipment | 7 | 5 | Elective | SP |
| 26 | Elective Courses Group 21 (PE). Students choose one of the two courses | | | | | |
| | 20.OE99 | Cable Technology | 7 | 5 | Elective | SP |
| | 20.OE100 | Thermal Process in Renewable Energy Sources | 7 | 5 | Elective | AP |
| Summary number of ETCS credits for Semester 7 | | | | 30 | | |
| 27 | 20.OE56 | Power System Protection | 8 | 5 | Comp. | TM |
| 28 | 20.OE57 | Power Systems Substations | 8 | 5 | Comp. | SP |
| 29 | Elective Courses Group 22 (PE). Students choose one of the two courses | | | | | |
| | 20.OE101 | Power System Analysis 2 | 8 | 5 | Elective | AP |
| | 20.OE102 | Power Engineering Optimization Methods | 8 | 5 | Elective | AP |
| 30 | Elective Courses Group 23 (PE). Students choose one of the two courses | | | | | |
| | 20.OE103 | Regulation of Electrical Drives | 8 | 5 | Elective | AP |
| | 20.OE104 | Specialized Software Applications for Design Renewable Energy Sources | 8 | 5 | Elective | AP |
| | New | Automotive Systems and Software Engineering | 8 | 5 | Elective | AP |
| 31 | 20.OE58 | Internship | 8 | 3 | Comp. | AP |
| 32 | 20.OE59 | Study Research Work on Theoretical Basics of the Diploma Thesis | 8 | 3 | Comp. | SP |
| 33 | 20.OE60 | Diploma Thesis | 8 | 4 | Comp. | SP |
| Summary number of ETCS credits for Semester 8 | | | | 30 | | |
| Summary number of ETCS credits for Year 4 | | | | 60 | | |
| Summary number of ETCS credits for all four years of studies | | | | 240 | | |

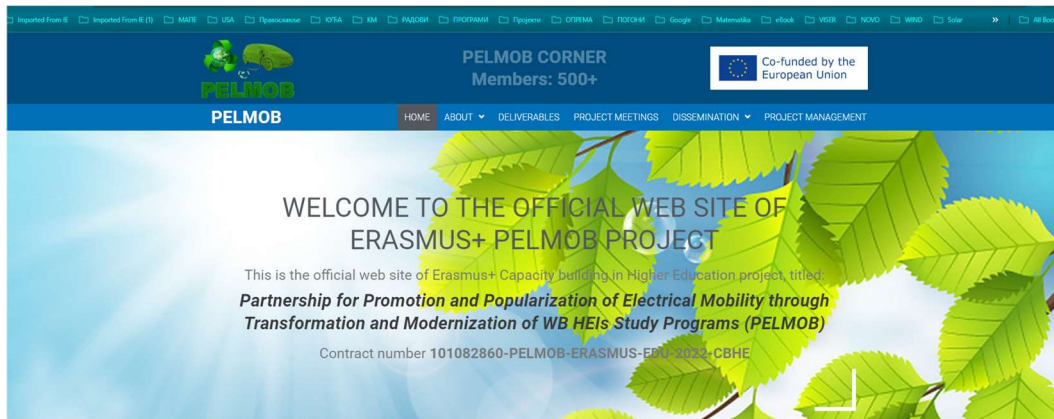
4. PELMOB - ERASMUS + PROJECT

The University of Pristina with headquarters in Kosovska Mitrovica is the coordinator of the international project:

„Partnership for Promotion and Popularization of Electrical Mobility through Transformation and Modernization of WB HEIs Study Programs – PELMOB“.

Project number: 101082860-PELMOB-ERASMUS-EDU-2022-CBHE,

Project link: <https://pelmob.pr.ac.rs/>



The wider goal of the PELMOB project is to improve the quality of higher education in the field of electric mobility in accordance with EU trends, then contribute, promote and popularize electric mobility, strengthening its importance for the labor market and society. This broader goal fully agrees with the priorities of Capacity Building projects within the Erasmus + program (Green Deal, digital transformation, sustainable growth and employment). Also, the benefits for all partner countries of the Western Balkans are reflected in the search and application of the most appropriate scientific methods and best practices during the PELMOB project.



One of the main goals of establishing the Association for the Promotion of Electromobility (APEM) at the University of Prishtina with its temporary headquarters in Kosovska Mitrovica is to promote and popularize the use of electric vehicles in traffic. The main activities of the Association are aimed at holding workshops with the aim of promoting electromobility in local and city communities, participating in the development strategies and encouraging electromobility at the local and regional level, collecting funds for scientific and research work in the field of electromobility, giving proposals and opinions regarding modernization of curricula, etc. Considering the importance and increasing presence of electromobility in the world, the existence and work of the Association represents a significant step forward in monitoring modern trends in the development of technology and society.

5. LIST OF NEW AND MODERNIZED COURSES RELATED TO ELECTRIC MOBILITY

One of the most important results of UNKM and FTN KM activities on the PELMOB project is the development and implementation of curricula and programs related to electric mobility. As part of the basic studies of the Faculty of Technical Sciences in Kosovska Mitrovica of the study program Electrical and Computer Engineering, elective module Power Electrical, the implementation of three new subjects in the field of electric mobility was carried out.

In addition, the curriculum was modernized for 4 existing subjects in accordance with the needs of the application of electric mobility in teaching.

Table 5 Table of teaching subjects: Basic academic studies Electrical and computer engineering - Module: Electric power (EE) Syllabuses table: University of Mitrovica - UPKM (Bachelor)

| | Course name | ECTS | |
|---|--|-------------|------------|
| 1 | Introduction to Climate Change Management | 5 | New |
| 2 | 20.OE13 Materials in Electrical Engineering | 7 | Modernized |
| 3 | 20.OE35 Distribution and Industrial Networks - Modernize | 6 | Modernized |
| 4 | Automotive Systems and Software Engineering | 5 | New |
| 5 | 20.OE33 Power Converters - Modernize | 6 | Modernized |
| 6 | 20.OE31 Automatic Control Systems - Modernize | 6 | Modernized |
| 7 | Internet of Things for Electric Vehicle | 5 | New |
| | TOTAL | 40 | |

5.1. Syllabuses of new courses

| | |
|------------------------------------|--|
| Study program: | Electrical and computing engineering |
| Course title: | Introduction to Climate Change Management |
| Lecturer/Instructor: | Irma Dervišević |
| Course status: | Elective |
| ECTS: | 5 |
| Admission and requirements: | No |
| Course goals | <p>Develop an understanding of the fundamental concepts of climate change. Explore the impacts of climate change. Identify international initiatives which support countries to plan for climate change. Examine strategies for mitigation greenhouse gas emissions and adaptation to the impacts of climate change. Understand the policy and governance frameworks related to climate change</p> |
| Learning Outcomes | <p>Students will learn how to assess climate-related risks and vulnerabilities, and develop strategies to enhance resilience at individual, community, and organizational levels.</p> <p>Students will be able to critically analyze and evaluate climate change policies, both at the national and international level.</p> <p>Students will gain knowledge of conducting Environmental Impact Assessments (EIAs) and be able to assess the potential environmental impacts of projects or policies related to climate change mitigation or adaptation.</p> <p>Acquiring skills in project management, including planning, implementation, monitoring, and evaluation of climate change initiatives.</p> <p>These learning outcomes enabling students to develop the necessary knowledge, skills, and attitudes to tackle the challenges posed by climate change.</p> |
| Course Content per Week | <ol style="list-style-type: none"> 1. The science background of climate change and global warming. 2. Relationship between human activities and climate change. 3. Basic principles of the science of climate change, including the causes, impacts, and potential solutions. 4. Various impacts of climate change on agriculture, water resources, ecosystems, and public health. 5. Identification risks associated with climate change, including vulnerabilities and potential impacts on various sectors. 6. Climate change vulnerability assessment 7. Climate change policy framework 8. Counting carbon |

9. Measuring, reporting, and verification GHG emissions.
10. Appropriate measures and adaptation strategies to minimize the negative impacts of climate change.
11. Different mitigation strategies and technologies for reducing greenhouse gas emissions.
12. Transitioning to a Low-Carbon Economy
13. The Path to Net Zero
14. Planning processes for climate change

Literature

1. John C. Shideler, Jean Hetzel, „*Introduction to Climate Change Management- Transitioning to a Low-Carbon Economy*”, <https://doi.org/10.1007/978-3-030-87918-1>, Springer Cham, 2021.
2. Walter Leal Filho, “*Climate Change and Disaster Risk Management*”, DOI 10.1007/978-3-642-31110-9, Springer-Verlag Berlin Heidelberg 2013.
3. Walter Leal Filho, Marina Kovaleva, Fátima Alves, Ismaila Rimi Abubakar, “*Climate Change Strategies: Handling the Challenges of Adapting to a Changing Climate*”, Springer Cham 2023, ISBN 978-3-031-28727-5, <https://doi.org/10.1007/978-3-031-28728-2>,
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5. Walter Leal Filho, „*Handbook of Climate Change Management - Research, Leadership, Transformation*”, ISBN:9783030227593, Springer International Publishing, 2020.
6. „Закон о климатским промена“, (Сл- гласник РС, бр.26/2021), <https://www.paragraf.rs/propisi/zakon-o-klimatskim-promenama.html>.
7. Consumer Footprint Calculator, EPLCA, <https://eplca.jrc.ec.europa.eu/ConsumerFootprint.html>

Course Meeting Times
(weekly)

L (lecture): 2

T (tutorial): 2

Teaching Methods

Lectures: Lectures: This is a traditional teaching method where the instructor presents information on climate change theories, concepts, and management strategies. This can be enhanced by incorporating multimedia presentations, real-world case studies, and guest speakers.

Discussions and Debates: Encourage students to actively participate in discussions where they can share their thoughts, ask questions, and engage in debates related to climate change management. This helps foster critical thinking and enhances understanding of the subject matter.

Problem-based Learning: Assign students’ real-life scenarios or case studies related to climate change management. By working on these problems in groups or individually, students can apply their knowledge, analyze data, and develop practical solutions, thereby enhancing their problem-solving skills.

Field Trips and Site Visits: Organize visits to local organizations, governmental agencies, or even climate-related projects to give students hands-on experience. Seeing the practical aspects of climate change management can provide a deeper understanding of the challenges and potential solutions.

Group Projects: Divide students into groups and assign them specific topics or projects related to climate change management. This allows them to collaborate, conduct research, and present their findings or proposals. It also promotes teamwork and enhances communication skills.

Multimedia and Technology: Utilize multimedia resources such as videos, interactive simulations, and online platforms to engage students and facilitate their understanding of complex climate change concepts. This can also include virtual field trips or guest lectures from experts around the world.

Assessment Methods: Use a variety of assessment methods, such as quizzes, exams, presentations, and research papers, to evaluate students' understanding of climate change management. This ensures a comprehensive evaluation of their knowledge and skills.

Method of knowledge assessment (maximum number of ETSCs is 100)

| Pre-exam obligations | ETSCs | Final Exam | ETSCs |
|-----------------------------|--------------|-------------------|--------------|
| Activity during the lecture | 10 | Presentations | 10 |
| Student research work | 10 | Seminars | 10 |
| Workshop sessions | 10 | Written exam | 20 |
| Debates | 10 | Oral exam | 20 |

The way to check knowledge can be different, the table above is just a few options:
(written exams, oral exam, project presentation, seminars, etc...)

*maximum required 2 pages of A4 format

| | |
|------------------------------------|---|
| Study program: | Electrical and computing engineering |
| Course title: | Automotive Systems and Software Engineering |
| Lecturer/Instructor: | Aleksandar Žorić |
| Course status: | Elective |
| ECTS: | 5 |
| Admission and requirements: | No |
| Course goals | <p>One of the main goals is to establish a strong foundation in understanding the various components and systems that make up an automobile.</p> <p>Gaining knowledge in software engineering principles: The goal is to be able to design, develop, and test software solutions for automotive systems.</p> <p>The course should introduce students to the fundamental concepts and principles of software engineering, such as software development life cycle, requirements engineering, software testing and quality assurance, software project management, and software maintenance.</p> <p>The course should focus on teaching students the specific techniques, tools, and methodologies used in developing software applications for automotive systems.</p> <p>The course should expose students to the current trends, challenges, and opportunities in the automotive software engineering field.</p> |
| Learning Outcomes | <p>Acquiring skills in developing embedded software for automotive applications, considering real-time constraints, resource limitations, and hardware-software integration.</p> <p>Gaining knowledge and skills in software engineering principles and practices, including requirements engineering, software design, implementation, testing, and maintenance.</p> <p>Developing a comprehensive understanding of the different systems in an automobile, including powertrain, chassis, safety, infotainment, and communication systems.</p> |
| Course Content per Week | <ol style="list-style-type: none"> 1. Automotive Software Engineering: Past, Present, and Future 2. Software Architectures: Views and Documentation 3. Automotive Software Development 4. Standardized software architecture framework for automotive electronics - AUTOSAR 5. Detailed Design of Automotive Software 6. Requirements Engineering for Automotive Embedded Systems 7. Integration programming environment winIDEA tool for automotive software development 8. Family of 32-bit Automotive Microcontrollers 9. AutoDevKit Studio for 32-bit power architecture MCUs 10. Code Generator, Quick resources configurator and Eclipse development environment for SPC5 MCUs 11. Automotive Infotainment Systems On Chips (SoCs) |

12. Stellar Software Development Tools
13. Use of Communication Protocols in Automotive Software Development Process
14. Current Trends in Automotive Software Architectures

Literature

1. Yanja Dajsuren, Mark van den Brand, „ *Automotive Systems and Software Engineering* “, <https://doi.org/10.1007/978-3-030-12157-0>, ISBN 978-3-030-12156-3, Springer 2019.
2. P. Sivakumar, B. Vinoth Kumar, R. S. Sandhya Devi, „ *Software Engineering for Automotive Systems Principles and Applications* “, <https://doi.org/10.1201/9781003269908>, ISBN 9781003269908, CRC Press 2022.
3. AutoDevKit™ a new development approach to Automotive & Transportation applications, © STMicroelectronics - November 2022
4. AutoDevKit Studio for 32-bit power architecture MCUs, STMicroelectronics, <https://www.st.com/en/embedded-software/stsw-autodevkit.html>.
5. SPC5-STUDIO, SPC5 Software Development Tools, STMicroelectronics, <https://www.st.com/en/development-tools/spc5-studio.html>.
6. Stellar Software Development Tools, STMicroelectronics, <https://www.st.com/en/development-tools/stellar-software-development-tools.html>.

Course Meeting Times
(weekly)

L (lecture): 2

T (tutorial): 2

Teaching Methods

Lectures: Traditional lectures can be used to introduce new concepts, theories, and principles related to automotive systems and software engineering.

Hands-on activities: Practical hands-on activities, such as laboratory sessions or workshops, can help students apply the knowledge gained in lectures. These activities may involve working with automotive systems, software tools, or simulators to reinforce understanding and develop practical skills.

Case studies: Case studies can be used to present real-world scenarios and challenges faced in the automotive industry.

Group projects: Assigning group projects encourages collaboration and teamwork among students.

Online resources: Utilizing online resources, such as websites, videos, and interactive simulations, can complement traditional teaching methods. These resources can be used for self-study, revision, and exploration of specific topics.

Field trips and industry visits: Organizing field trips to automotive manufacturing plants, research facilities, or industry conferences can give students exposure to real-world automotive applications.

| Method of knowledge assessment (maximum number of ETSCs is 100) | | | |
|---|--------------|-------------------|--------------|
| Pre-exam obligations | ETSCs | Final Exam | ETSCs |
| Activity during the lecture | 10 | Presentations | 10 |
| Student research work | 10 | Seminars | 10 |
| Workshop sessions | 10 | Written exam | 20 |
| Debates | 10 | Oral exam | 20 |
| The way to check knowledge can be different, the table above is just a few options: (written exams, oral exam, project presentation, seminars, etc...) | | | |
| *Maximum required 2 pages of A4 format | | | |



| | |
|--|---|
| Study program: | Electrical and computing engineering |
| Course title: | Internet of Things for Electric Vehicle |
| Lecturer/Instructor: | Vladimir Maksimović, Jelena Todorović |
| Course status: | Elective |
| ECTS: | 5 |
| Admission and requirements: No | |
| <p>Course goals</p> <p>Understand the fundamentals of IoT: The course should aim to provide students with a comprehensive understanding of the basics of IoT, including its underlying technologies, communication protocols, and the concept of connecting devices and sensors to the internet.</p> <p>Explore the applications of IoT in Electric Vehicles: Introduce the students to various applications of IoT in the context of electric vehicles.</p> <p>Learn about IoT architecture and components: Teach students about the different components and layers of an IoT architecture, such as sensors, actuators, connectivity modules, gateways, cloud platforms, and analytics. Help them understand how these components work together to enable IoT applications in electric vehicles.</p> <p>Familiarize with IoT protocols and standards: Introduce students to common IoT protocols and standards used in the automotive industry, such as MQTT, CoAP, OBD-II, and CAN bus.</p> <p>Develop skills in data analysis and interpretation: Emphasize the importance of data collection, analysis, and interpretation in IoT applications for electric vehicles. Teach students how to process and analyze the data generated by sensors and actuators, and translate it into meaningful insights and actions.</p> <p>Stay updated with industry trends: Encourage students to stay updated with the latest advancements and trends in IoT for electric vehicles.</p> | |
| <p>Learning Outcomes</p> <p>Understanding of IoT concepts: Developing a solid understanding of IoT principles, including network communication protocols, data transmission, cloud computing, and data analytics, as they apply to electric vehicles.</p> <p>Knowledge of sensors and data collection: Gaining knowledge of different types of sensors used in electric vehicles, such as GPS, accelerometers, temperature sensors, and battery monitoring systems, along with their integration and data collection methods.</p> <p>Proficiency in connectivity technologies: Acquiring skills in various connectivity technologies used in IoT for electric vehicles, including cellular networks, Wi-Fi, Bluetooth, and dedicated short-range communication (DSRC).</p> | |

Data management and analytics: Learning techniques for managing and analyzing large volumes of data collected from IoT-enabled electric vehicles, including data preprocessing, storage, real-time processing, and predictive analytics.

Security and privacy considerations: Understanding the importance of security and privacy in IoT for electric vehicles, including authentication, encryption, secure data transfer, and compliance with relevant regulations and standards.

Integration of IoT platforms: Acquiring knowledge of IoT platforms, such as cloud services and edge computing, and their integration with electric vehicle systems for data management, remote monitoring, and control.

Development of IoT applications: Gaining skills in developing IoT applications for electric vehicles, such as remote diagnostics, predictive maintenance, energy management, fleet management, and smart charging.

Course Content per Week

1. Connected Vehicles in the IoV: Concepts, Technologies and Architectures
2. Spatial Intelligence and Vehicle-to-Vehicle Communication: Topologies and Architectures
3. Integrating Vehicular Technologies Within the IoT Environment
4. IoT for Telematics -integration of telecommunications and information technology in vehicles
5. Smart Transportation Tracking Systems Based on the Internet of Things Vision
6. Enhancing Telematics Systems and Fleet Management with IoT
7. Shortest Distance Calculation Techniques in IoT-Based Wireless Sensor Networks
8. Intelligent Transportation System Based on Internet of Things (IoT)-Based Cloud Applications
9. IoT technology for Smart Charging Infrastructure, vehicle to charging station communication
10. IoT in Energy Management and Grid Integration of Electric Vehicles
11. Smart Charging of EVs to Harvest Flexibility for PVs
12. Safety and Security Electric Vehicles with IoT Technology
13. Secure communication between EVs and the grid infrastructure with IoT
14. Data Analytics and Predictive Maintenance

Literature

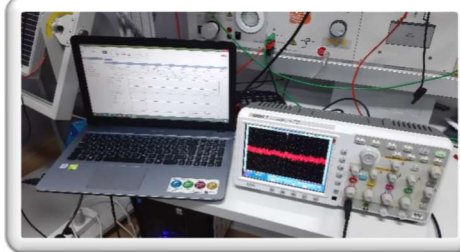
1. Zaigham Mahmood, „ *Connected Vehicles in the Internet of Things -Concepts, Technologies and Frameworks for the IoV* “, ISBN 9783030361693, Springer 2021.
2. Vahid Vahidinasab, Behnam Mohammadi-Ivatloo, „ *Electric Vehicle Integration via Smart Charging Technology, Standards, Implementation, and Applications* “, <https://doi.org/10.1007/978-3-031-05909-4>, ISBN 978-3-031-05911-7, Springer 2022.

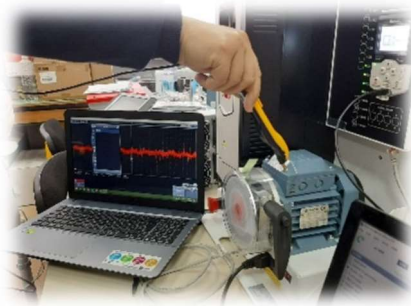
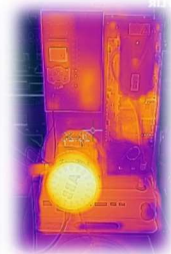
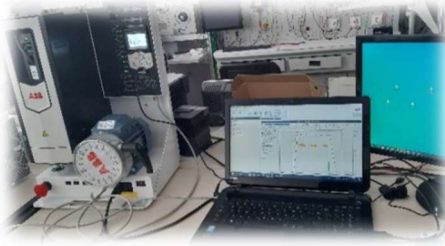
| | | | |
|--|--------------------------|------------------------|-------|
| Course Meeting Times (weekly) | L (lecture): 2 | T (tutorial): 2 | |
| Teaching Methods | | | |
| <p>Lectures: Begin by providing lectures that introduce the fundamental concepts of IoT and its applications in the context of electric vehicles. Use visuals, examples, and real-world case studies to make the content more relatable and understandable.</p> <p>Hands-on Projects: Practical sessions the course where students can work on hands-on projects related to IoT and electric vehicles.</p> <p>Simulations and Virtual Labs: Utilization simulation tools and virtual labs to give students a hands-on experience of working with IoT devices and systems in the context of electric vehicles.</p> <p>Online Resources and Collaborative Platforms: Provide students with access to online resources such as research papers, articles, videos, and tutorials related to IoT and electric vehicles.</p> <p>Field Trips and Industry Visits: Plan field trips to relevant industries, research centers, or IoT development companies working on electric vehicles.</p> <p>Assessments and Assignments: Include regular assessments and assignments to evaluate students' understanding and progress throughout the course.</p> | | | |
| Method of knowledge assessment (maximum number of ETSCs is 100) | | | |
| Pre-exam obligations | ETSCs | Final Exam | ETSCs |
| Activity during the lecture | 10 | Presentations | 10 |
| Student research work | 10 | Seminars | 10 |
| Workshop sessions | 10 | Written exam | 20 |
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| The way to check knowledge can be different, the table above is just a few options: (written exams, oral exam, project presentation, seminars, etc...) | | | |
| *Maximum required 2 pages of A4 format | | | |

6. FTN KM LABORATORIES AND EQUIPMENT





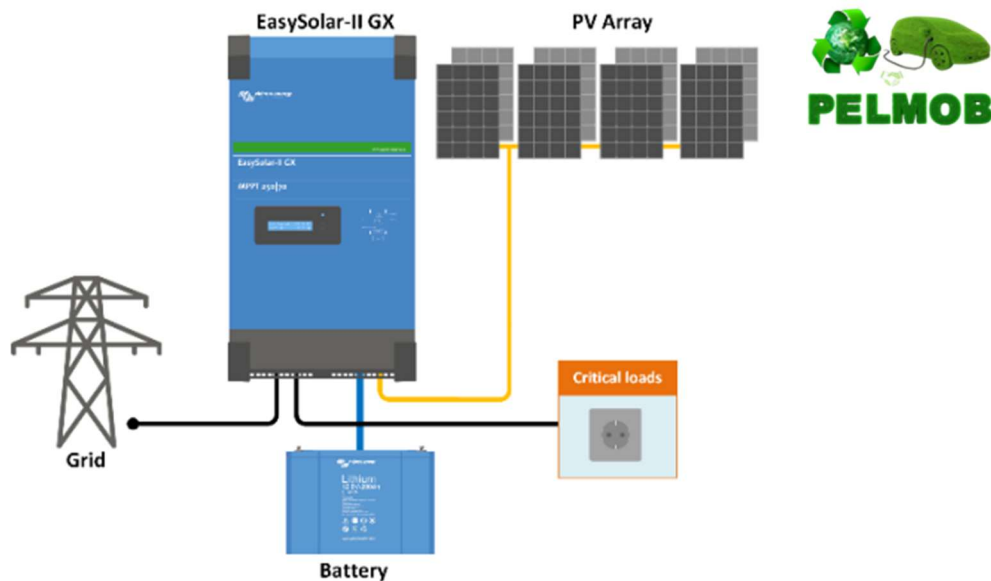




As part of the ERASMUS + PELMOB international project to improve capacities in higher education, it is planned that the Faculty of Technical Sciences will establish a Laboratory for Electric Mobility. One of the main goals of the PELMOB project is to promote the idea of using electric vehicles from renewable sources of electricity.



The project envisages that low-power electric vehicles can be used in the courtyard of the Faculty of Technical Sciences building. For this reason, it is necessary that the hybrid multifunctional energy converter, solar batteries and low-voltage single-phase distribution for rectifiers be mounted on the ground floor of the building. Due to the voltage drop limitation, the solar panels will be mounted in the courtyard of the building at a short distance from the hybrid multifunctional energy converter and solar batteries.



7. ADVERTISEMENTS FOR POWER ELECTRICAL ENGINEERS

EE JOBS: 30 open ads for power engineers:

03.01.2024 Graduated electrical engineer - Diagonala Espro Vrbas

20.12.2023 Principal Power Systems Studies Engineer Mott MacDonald
Belgrade

20.12.2023 Senior Electrical Engineer - Adecco Belgrade

20.12.2023 Project Specialist & Technical Support Engineer, Motion Business Area - ABB Belgrade
17.12.2023 Electrical Engineer - Mint Serbia, Šabac
10.12.2023 Eplan P8 Engineer - Schneider Electric Serbia
27.12.2023 Junior Electrical Design Engineer - Introba Belgrade, Šabac
12/19/2023 Graduated in electrical engineering - Sipatec Belgrade
27.12.2023 Engineer for power installations - Chemengineering International BG
23.12.2023 Electrical Engineer - Takenaka Europe Belgrade
12/12/2023 Sales engineer - Comel Belgrade
09.12.2023 Engineer in the department for calculating electrical works (multiple executors) - Stroj Engineering Belgrade
06.12.2023 Engineering Manager - Nidec Electric Motor Novi Sad
06.12.2023 Engineer for operational management - NDC dispatcher, Engineer for system services and analysis of the operation of the regulatory block, Engineer for planning the operation of the transmission system - Elektromreža Srbije Belgrade
06.12.2023 Operational management engineer - dispatcher - RDC Elektromreža NS, KS, BO, VA, BG
22.12.2023 Electrical engineer of energy - Energy Bridge Consulting BG
21.12.2023 Electrical engineer - preparations - Controlpoint Užice
20.12.2023 Project manager in electricity - Gat Novi Sad
07.12.2023 Energy/automation engineer - Energomag Subotica
07.12.2023 Electrical engineer - HBIS Smederevo
05.12.2023 Advisor - Renewables and Power Grids Operations Specialist - Representation of GIZ GmbH Beogra
05.12.2023 Engineer for renewable energy sources - LOGO Belgrade
09.12.2023 Electrical engineer (PLC and SCADA), Electrical engineer - 3B Engineering Belgrade



Call: ERASMUS-EDU-2022-CBHE-STRAND-2
Project Number: 101082860



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This is the official web site of Erasmus+ Capacity building in Higher Education project, titled *Partnership for Promotion and Popularization of Electrical Mobility through Transformation and Modernization of WB HEIs Study Programs (PELMOB)*

Contract number 101082860-PELMOB-ERASMUS-EDU-2022-CBHE



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