Co-funded by the European Union

Study visit; SC and PMC meetings, Euripus Campus, Psachna, Greece, 10.10.2024.

University of Donja Gorica
Faculty of Applied Sciences

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About our existing program

- The Faculty of Applied Sciences was founded in 2016 at University of Donja Gorica.
  - *Applied Psychology, Matemathics, Geodesy and Electrical Engineering and Computer Science*

- The study program in Electrical Engineering and Computer Science contributes to the increase of individual student value in the knowledge market.

- In 2022, the original four-year program curriculum underwent revision, transitioning to a three-year program, due to higher education regulations in Montenegro.

Incorporation of new competences

- ***IoT Systems and Applications***
  - Understand the principles and architecture of IoT systems, including sensors, actuators, and communication protocols.
  - Course integration: In the course Computer Networks and Telecommunications add modules on IoT protocols, communication and security. Encourage final thesis based on IoT-projects focusing on energy monitoring and management.

- ***AI and Machine Learning for Energy Management***
  - Grasp the fundamentals of AI and machine learning algorithms and their applications in the energy sector.
  - Course integration: In the course Data Structures and Algorithms include AI and ML Algorithms specific to energy data analysis. In the course Software Engineering introduce AI/ML software development kits (SDKs) and tools for creating energy management solutions. In the course Digital Transformation incorporate AI and ML techniques in energy efficient projects.

Incorporation of new competences

- ***AR/VR Technologies for Energy Systems***
  - Understand better the energy sector by using AR/VR technologies.
  - Course integration: Implement virtual labs in courses such as Electrical Engineering, Analog Electronics, Robotics and Automation.

- ***Robotics in Energy infrastructure***
  - Understand the design and functioning of robotic systems and their applications in energy sector operations.
  - Course integration: in the course Robotics and Automation expand the curriculum to include robotics applications in energy infrastructure, such as maintenance of renewable energy installations. Integrate the use of simulation software and tools such as MATLAB/Simulink for modeling and simulating maintenance scenarios.

New competences to be developed withing the NEST4WB project

- ***Advanced Simulation and Modeling***
  - Understand advanced simulation techniques and modeling tools for energy systems.
  - Course integration: In the course Signals and Systems use simulation software to model and analyze energy systems. Include dedicated sessions for simulation and modeling into curriculum. Develop laboratory exercises that utilize simulation software to solve real-world problems.

- ***Smart Grid Technologies and Applications***
  - Learn about smart grid technologies, including advanced metering infrastructure, grid automation, and demand response.
  - Course integration: In the course Telecommunications and Computer Networks integrate smart grid communication protocols and network management. Include hands- on labs and projects related to IoT and smart grid technologies.

New competences to be developed withing the NEST4WB project

- ***Sustainable Energy Solutions***
  - Understand sustainable energy technologies and their role in reducing carbon footprints
  - Course integration: In the course Alternative Energy Sources and Power Supply focus on sustainable practices and technologies. Update course content with lectures on introduction to sustainable energy solutions and case studies / real-world applications. Shift a portion of the assessment to project-based learning where students work on designing sustainable energy solutions for real-world problems. Encourage final thesis on sustainable energy solutions.

- ***Project Management for Technological Innovations***
  - Learn project management methodologies and tools specific to technology and energy projects.
  - Course integration: Expand the course Project Management to include case studies and projects related to technological innovations in the energy sector. For final thesis encourage students to undertake projects that involve managing technological innovation.