coil.serenade

Co-funded by the European Union

Collaborative Online International Learning to Foster Sustainability, Empowerment & Resilience of Energy Networks, And the Digitalization of Higher Education

CALL FOR PARTICIPANTS
Collaborative Online International Course

April 7 – May 21, 2025

About the Project & Course

COIL-SERENADE is designed to **empower educators and students** by promoting **collaboration** and strengthening **digital and 21st-century skills**. The project focuses on **improving education quality in the energy sector** through **Collaborative Online International Learning (COIL)**, which brings **interdisciplinary perspectives** to real-world challenges. It also supports the development of **modern and resilient educational systems in Ukraine**, addressing challenges posed by the ongoing war.

The course offers an **international, interdisciplinary learning experience** in the energy sector, based on a **case study developed by educators from Germany, Italy, Ukraine, and Estonia**. Designed for students in **civil engineering, architecture, energy technology, urban planning**, and related fields, the course promotes **collaboration, critical thinking**, and **digital skill development**. It follows the **COIL approach** and uses the **Virtual Collaborative Learning (VCL) framework** from **TU Dresden** to support **teamwork and active learning** in international teams via **MS Teams**. Upon completion, **students receive a certificate with 3 ECTS credits**

SCAN QR-CODE FOR DETAILS & REGISTRATION

Time Frame	Description of the Tasks	Online Meetings
Week 1: Intro April 07 – April 14, 2025	Introduction to the case study, team members, MS Teams and e-tutors	**Kickoff Meeting** 07.04.25 16:00 – 18:00 CET
Week 2: IT Case April 14 – April 23, 2025	Introduction to Geographic Information Systems (GIS), including data collection methods, storage formats, and spatial analysis. Hands-on use of QGIS and OpenStreetMap to extract and process building data, apply elevation statistics, and generate geojson files.	–
Week 3: IT Case April 23 – April 30, 2025	Fundamentals of Building Energy Modeling (BEM), covering principles of heat transfer, energy balance, HVAC systems, and simulation processes. Includes collecting building and climate data, calculating U-values, and estimating heating and cooling needs.	**Practical Workshop** 23.04.25 16:00 – 18:00 CET
Week 4: IT Case April 30 – May 07, 2025	Urban Building Energy Modeling (UBEM) using simplified steady-state calculations. Involves assigning building properties, calculating surface areas, volumes, and heat transfer coefficients, and estimating city-scale heating demand. Scenarios for improving energy efficiency are developed.	**Interim Presentation** 07.05.25 16:00 – 18:00 CET
Week 5: UA Case May 07 – May 14, 2025	Assessment of the current condition of buildings and energy infrastructure in a war-affected model district in Ukraine, including analysis of energy demand, vulnerabilities, resilience, and renewable energy potential.	–
Week 6: UA Case May 14 – May 21, 2025	Development of a roadmap for complex renovation and decarbonization, focusing on energy-saving measures, renewable integration, urban energy efficiency optimization, and smart grid solutions to improve resilience in Ukraine.	**Final Presentation** 21.05.25 16:00 – 18:00 CET

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