**URBAN ENERGY PLANING  
Course Program**

The program is designed to provide University students with a collaborative, international learning experience focused on sustainable energy analysis at both the building and urban scales. Through a structured online course, students will learn to use Geographic Information Systems (GIS), Building Energy Modeling (BEM), and Urban Building Energy Modeling (UBEM) to assess and mitigate energy consumption in buildings. The course incorporates practical case studies and teamwork, ensuring students gain hands-on experience.

**Course Objectives**

* Devleop competencies in GIS for spatial data analysis.
* Apply BEM techniques to assess building energy performance.
* Utilize UBEM for large-scale energy consumption analysis.
* Benefit from international collaboration and teamwork through a virtual learning environment.
* Engage with real-world data and tools to propose energy-efficient solutions.

**Course Structure:**

7 weeks in the middle of second semester full immersion working in group with other students of tìother Universities:

* 3 weeks for training
* 3 weeks for the project
* 1 week for reporting

In detail

*Time 0 - Kickoff Session .*

Initiate the course with an introduction to COIL principles, familiarize students with essential digital tools, form collaborative groups, and provide foundational theories and skills to prepare for upcoming modules.

*Week 1 - Geographic Information Systems (GIS)*fundamentals of GIS, emphasizing the importance of geospatial data in energy analysis.

*Time 1 (after 1 week): Meeting to check the progress of GIS*

*Week 2 - Building Energy Modeling (BEM)*The principles of BEM, its significance in assessing building energy performance.

*Time 2 (after 2 weeks):: Meeting to check the progress of BEM*

*Week 3 - Urban Building Energy Modeling (UBEM)*Introductory UBEM concepts, focusing on urban-scale energy performance factors

*Time 3 (after 3 weeks):: Meeting to check the progress of UBEM; second step project assignment:*

*Real World Case Study Project*Application of the gained knowledge to analyze a real-world case study in Ukrainian context, group collaboration to assess current energy consumption and to propose strategies of improvement towards a more sustainable built environment.

**Prerequisites:**The COIL-SERENADE course is particularly beneficial for students pursuing degrees in civil engineering, architecture, energy technology, urban planning, environmental engineering, and sustainable energy systems. It is tailored for individuals interested in energy planning and the application of digital tools within the built environment. While the course is designed to accommodate various backgrounds, having prior basic knowledge in building physics, energy infrastructure, and technical systems in buildings, as well as an understanding of fundamental concepts in building energy modeling, will enhance the learning experience.

**Certification:**  
The students who successfully present their course project will be awarded with 3 ECTS.