

## **ENERGY PLANNING FOR SUSTAINABLE EFFICIENCY – 6 CFU LM**

### **Pisello (48 ore)**

This course provides students with a multidisciplinary foundation in energy planning and sustainable efficiency within the broader context of climate change, environmental management, and resilient infrastructure design. Emphasizing systems thinking, students will explore the interactions between energy systems, sustainability metrics, and policy frameworks that shape efficient and resilient urban and industrial development.

Core topics include climate system fundamentals, sustainability challenges, environmental regulation, and tools for environmental impact assessment such as Life Cycle Assessment (LCA), life cycle cost, and social LCA, carbon and water footprinting, and the most relevant sustainability indicators. The course also examines the evolution of environmental policy, ethical dimensions of sustainable development, and the planning of infrastructures such as transportation, waste, overheating, and stormwater systems with sustainability in mind.

Through a combination of theoretical lectures, real-world case studies, and group work, students will develop the skills to critically evaluate energy strategies and infrastructure solutions from an environmental, social, and regulatory perspective.

### **Learning Outcomes:**

By the end of the course, students will be able to:

- Understand drivers of climate change and sustainability in the energy sector
- Apply sustainability metrics and perform life cycle assessments
- Interpret environmental policy instruments and regulatory frameworks
- Analyze the environmental impact of energy infrastructure
- Communicate effective energy planning strategies for sustainable development

Basic knowledge in environmental science is recommended. The course includes a final written exam (multiple-choice questions) and a group-based short report applying course concepts to a practical sustainability case. Both are required for final evaluation.