



UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Climate emergency, energy transition and sustainable mobility

2223-BbetweenSDG-08-02

Module description

Starting from the current energy crisis and the climate emergency, the module begins by dealing with energy sources, greenhouse gas emissions and the main causes of pollution. The sources of energy will be described in particular with regard to the production of electricity and their role in present and future society, with references to the history of international treaties and protocols on climate change and energy transition. The module will therefore focus attention on the world of transport and its critical issues, problems and future prospects, focusing on the one hand on electric mobility and on the other on hydrogen as a clean and renewable fuel, using Sun as the main primary source of energy. Finally, conclusions will be reached by explaining the role that each citizen can play in order to actively contribute to the Goals set by the UN Agenda 2030, with particular reference to the use of electricity and clean and renewable fuels in daily life and sustainable mobility.

Learning goals

General goal

Introducing the main concepts related to the energy crisis and the climate change, in the perspective of the energy transition, with particular reference to the world of transport, which alone accounts for over a quarter of all emissions and is still based almost exclusively on fossil fuels.

Specific skills and competences

- Knowledge of international treaties and protocols on climate change and energy transition, including the

most recent ones;

- role of energy sources, from fossil to renewable ones;
- description of the role of transport in terms of energy consumption and climate-changing emissions;
- knowledge of the methods of sustainable mobility on road, rail, sea and air available both today and in the medium-long term;
- awareness of the critical issues related to energy sources and the world of transport and knowledge of the methods with which everyone can contribute to the energy transition and the decarbonisation of society.

Sustainable Development Goals of the 2030 UN Agenda

7- Affordable and clean energy

Breakdown of meetings

The module lasts 12 hours and is organized in 6 meetings, two hours each.

Detail.

1. 2 hours. The energy crisis, greenhouse gas emissions, climate change, energy sources and the causes of pollution. The energy sources in the production of electricity: critical issues and problems. The role of electricity in present and future society (short, medium and long term). Brief history of international treaties and protocols on climate change and energy transition. The UN 2030 Agenda and the Sustainable Development Goals.
2. 2 hours. The world of transport: critical issues, problems, future prospects. Energy from the sun.
3. 2 hours. Electric mobility by road, water and air.
4. 2 hours. Battery Electric Vehicles (BEV)
5. 2 hours. Hydrogen: clean and renewable fuel. From the European "Hydrogen Strategy" to the targets of the Italian National Recovery and Resilience Plan (PNRR). The applications of hydrogen in the world of transport: science, technology and potential. Fuel Cell Electric Vehicles (FCEV).
6. 2 hours. Conclusions: what everyone can do today to actively contribute to the Goals set by the UN Agenda 2030, with particular reference to the use of electricity in daily life and sustainable mobility.

Number of participants

There is no limit to the number of participants.
The module is delivered remotely.

Language used in meetings

Italian

Delivery period of the module

May-June 2023.

The material will be available online. The indication of the delivery period is necessary for students to plan training activities.

Methods of assessing the outcomes of the learning process

Oral discussion

Department of affiliation of the teacher

Department of Materials Science

Sustainable Development Goals

AFFORDABLE AND CLEAN ENERGY
