

HOW TO APPLY

The course is offered to PhD students and researchers and professionals in the field.

In order to apply for this course please click the link below:

<https://www.polimi.it/en/corsi/master-universitari-e-corsi-post-laurea/translate-to-english-dettaglio-master/482>

and insert your application as requested.

The deadline for the application is **23th June 2025**

The School will be activated with at least 10 students

Maximum number of participants: **50**

Required documents for the application:

- Identity Document or Passport
- Curriculum Vitae with specification if PhD student and if needs final examination

In case more than 50 students apply, the selection process will be made by the organizing committee according to: i) the quality of the CV, ii) the affinity of the background and/or research activities to the topics of the School.

If necessary, the Direction may modify the programme, the Faculty and the course teaching method.

REGISTRATION FEE

No registration fee required.

Course offered by POLIMI as part of the SmartWins Horizon Europe project.

DELIVERY STRUCTURE

Dipartimento di Energia – Politecnico di Milano

DATES

The summer school will be held from

July 14 to July 18, 2025. One-week course: **9:00 - 17:30**

(detailed timetable under drafting)

LOCATION

Politecnico di Milano – Bovisa Campus

Department of Energy – BL25 Building

Via R. Lambruschini 4a

20156, **Milano**

Council Room – ground floor

COURSE COORDINATORS

Prof. Livio Mazzarella

Prof. Rossano Scoccia

Department of Energy, Politecnico di Milano

livio.mazzarella@polimi.it

rossano.scoccia@polimi.it

ORGANIZING STAFF

Specializing Master and Continuing Education office

Department of Energy, Politecnico di Milano

Summer School SmartWins: Building the Digital Twin and the EPBD

**1st Edition
July 14-18, 2025**

**Politecnico di Milano - Department of
Energy**

Bovisa Campus

Course offered by POLIMI within the Smartwins Horizon Europe project. This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101078997.

COURSE PARTICIPANTS

The course is offered to PhD students and researchers and professionals in the field.

ATTENDANCE MODE

In presence and online.

TRAINING FORMAT

Lectures will be offered by Italian and international professors and researchers expert of building physics, LCA and energy systems for buildings. Q&A and discussion session will conclude each seminar.

LANGUAGE

English.

EXAM MODE (only if requested)

Final written exam in presence.

ECTS/CFU credits

5 (recognized upon attendance and exam completion).

CERTIFICATE OF ATTENDANCE

At the end of the Summer School, the participants will receive a certificate of attendance, provided that they have attended at least 80% of the lectures.

MISSION AND GOAL

The main objectives of the Summer School are:

1) in-depth study of the Digital Twin topic applied to the built environment sector and in particular as a tool for improving energy performance and comfort;

2) in-depth study and consequences of the latest Energy Performance of Buildings Directive (EPBD4);

3) description and examples of the application of calculation methodologies congruent with the principles of EPBD4 for both energy performance and environmental performance (Life Cycle GWP indicator calculation).

PRELIMINARY PROGRAM

- Paris A. Fokaides (KTU and Frederick University)
Introduction to Digital Twins Concept (Definitions, Characteristics)
- Rossano Scoccia (Politecnico di Milano)
Digital Twins in the context of building energy design and optimization. Energy performance layer of Digital Twin architecture.
- Marco Pritoni (LBNL, USA)
Optimization of building operation and building-to-grid interaction
- Alfonso Capozzoli (Politecnico di Torino)
Enhancing Predictive Building energy Management with Digital Twin and Data Analytics
- Livio Mazzarella (Politecnico di Milano)
The latest Energy Performance of Buildings Directive (EPBD4) Indicators Calculation Methodology
- Rossano Scoccia (Politecnico di Milano)
Methodology application example
- Enrico Fabrizio (Politecnico di Torino)
Dynamic Primary Energy and CO₂eq Factors
- Livio Mazzarella (Politecnico di Milano)
Life Cycle Assessment and the EPBD4
- Jacopo Famiglietti (Politecnico di Milano)
Life Cycle GWP indicator calculation methodology Methodology application example
- Livio Mazzarella, Rossano Scoccia (Politecnico di Milano)
Monitoring and maintenance as EPBD goals achievement using Digital Twin Case studies examples
- Francesco Causone (Politecnico di Milano)
Urban Building Energy Modelling: the state of the art