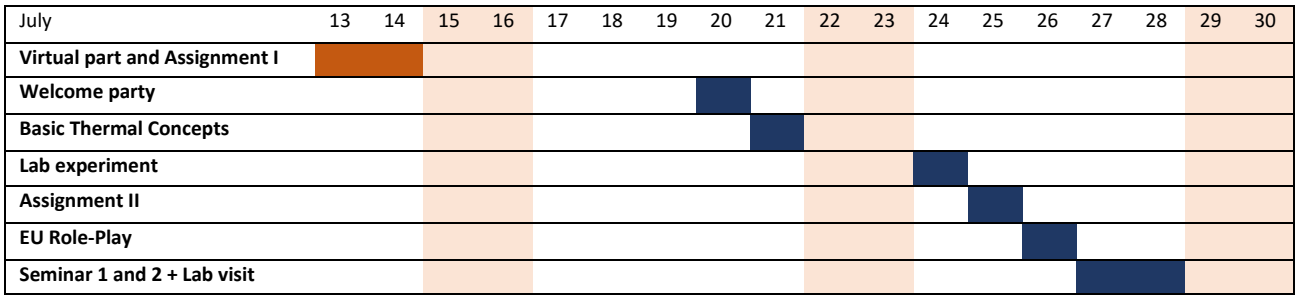
Heat loss in buildings and sustainability: local approaches to global problems

Timeline



DEADLINE FOR SUBMISSION OF FINAL ASSIGNMENT: AUGUST 25TH

13th July 2023 Thursday

Virtual (9:00 – 12:30)

GENERAL INTRODUCTION / Definition of the teams (45' h)

TEAM ACTIVITY. Each member of the group searches for a specific time evolution of a meaningful parameter (in the span 1950 - today or 1900 - today) eg. hydrocarbons burnt/year, CO2 emissions/year, Average temperature/year. Then they present to the group the data collected, in search for correlations. (1h 15')

REPORT ACTIVITY. Each group produces a video, a presentation about the results and conclusions of the Team Activity (1h 30')

Virtual (14:00 – 15:30)

GROUP DISCUSSION. Each team presents the results (5' per Team), open discussion. (1h 30')

Asynchronous[1] and autonomous work

ASSIGNMENT I. Each team is asked to produce a document considering all the significant aspects that emerged from the **group discussion** and to draw conclusions.

14th July 2023 Friday

[1] This work can be done at any time even after the end of the in presence part of the BIP, always respecting the deadlines communicated by the teachers.

Virtual (8:00 – 17:00)

POLICY AND GLOBAL GOVERNANCE. Policy and global governance (all day: 2h preparation for the discussion (8.00-10-00) + 2h lecture 10.00-12.00 + 2h seminar for discussing material 13.00-15.00 (Group 1) and 15.00-17.00 (Group 2)

19th, 20th July 2023: Arrival in Torino

20th July 2023 Thursday

In presence (18:00 – 19:30)

THERMAL FLUO-COCKTAIL PARTY. Each team measures the temperature over time of a fluo-cocktail in glasses with different thermal insulation. (3h. **TLlab Building**)

21st July 2023 Friday

In presence (9:00 – 11:00)

BASIC THERMAL CONCEPTS. Basic Thermal concepts on Building energy dispersions through the walls: (Thermal Transmittance, Resistance, Conductivity) [brief theoretical introduction - mini-lecture + team activity in which they become familiar with the concepts and discover something or come to personal conclusions]. (2h, **Room 8N**)

24th July 2023 Monday

In presence (9:00 – 13:00)

LAB EXPERIMENT (morning)**.** Thermal Transmittance of a box as a simplified building model.

- First phase. Measure of the average Transmittance of the "box". (2h, **LED labs**)
- Second phase. Addition of insulating panels on a number of walls of the "box", measure of the improvements in the Thermal Transmittance. (2h, **LED labs**)

25th July 2023 Tuesday

In presence - Teams work autonomously at the TLlab Building (9:00 - 13:00) + (14:30 – 16:30)

ASSIGNMENT II. Each team produces a report in which:

- Presents the results and conclusions of the experiment

- Evaluates the energy saving per person for different buildings average Thermal Transmittance scenarios, the correspondent CO2 savings and tries to answer to a general and global questions about the amount of energy needed for the heating of the buildings of all the Planet (4h, **TLlab Building**)

26th July 2023 Wednesday

In presence (9:00 - 12:00) + (13:30 – 17:00)

EU DECISION-MAKING ROLE PLAY.

- Lecture on Governing society and multilevel decision-making (2h 30', **Room 8N**)
- Role Playing game (2h 30', **Room 8N**)

27th July 2023 Thursday

In presence (9:00 – 11:00)

SEMINAR. "New materials for moisture and thermal buffering, super-insulating panels, dynamic/smart glazing and adaptive/active façades". *Research Unit on Advanced Building Envelope, TEBE Research Group* (@ **Politecnico di Torino**)

In presence (11:00 – 13:00)

VISIT. DENERG[2] **HTC Lab** (Lab for hygrothermal properties characterisation of materials and systems) and **TWINS** (Testing Window Innovative Systems) (@ **Politecnico di Torino**)

In presence (14:30 – 16:30)

REAL DATA ANALYSIS. Analysis of monitored data on real building envelopes (2h)

Asynchronous[3] and autonomous work

ASSIGNMENT III. Each Team analyses a specific dataset of monitored data on real building envelopes.

[2] Department of Energy (Politecnico di Torino)
[3] This work can be done at any time even after the end of the in presence part of the BIP, always respecting the deadlines communicated by the teachers.

28th July 2023 Friday

In presence (9:00 – 13:00) (exact timing still to be defined)

SEMINAR. 2 "Technology and processes enabling a hydrogen-driven future"

VISIT. DENERG **HySyLab** and **CO2 Circle Lab**: integrated laboratories for H2 and CO2 processes and technologies.

DEADLINE FOR SUBMISSION OF FINAL ASSIGNMENT: AUGUST 25TH!