

Title: **Sustainable thinking: from Microclimate to Lifecycle**

Module 1 *Urban heat island: mitigation strategies and environmental simulations*

After a briefly overview on the Global initiatives addressing climate change and possible related actions, the lecture will focus on the concept of urban heat island (UHI) phenomenon and its main causes, linked also to the current research trends. Various mitigation strategies at both urban and buildings scales will then be presented and analysed through environmental simulations conducted in historical urban districts. The advantages in terms of both outdoor comfort and wellbeing as well as benefits in operational conditions for buildings will be then assessed and discussed in detail.

Module 2 *Life Cycle Thinking: methods and applications*

The module will highlight the Life Cycle Thinking (LCT) approach, focusing on both Life Cycle Assessment (LCA) and Life Cycle Cost (LCC). An overview of the methodologies will be provided to deepen the understanding of both analyses. Relevant standards for environmental labelling will be introduced, and Environmental Product Declarations (EPDs) of various insulation materials will be presented and compared in terms of environmental impact. Selected results from ongoing research will also be discussed to provide further insights into the LCT approach.

Interactive activities with students will be included in both modules.