



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Smart Mobility

2425-2-FDS01Q038-FDS01Q038M

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#### Aims

Gain knowledge related to typical mobility issues in highly urbanized environments and tools for processing mobility data.

#### Contents

- Towards the data-driven city
- Smart Mobility: Technology Enablers and Disruptors
- Mobility as a Service
- Mobility analytics with GeoPandas

#### Detailed program

##### **Towards the data-driven city**

Challenges, main elements, the augmented city

##### **Smart Mobility - Foundational Technologies**

Introduction to smart mobility - the technological aspects of smart mobility - foundational technologies

##### **Smart Mobility - Technology Enablers**

The technological aspects of smart mobility - Technology Enablers

##### **Smart Mobility - Disruptors / Mobility as a Service**

The technological aspects of smart mobility - Disruptors - Mobility as a Service model

**Lab session 1: Introduction to GeoPandas**

**Lab session 2: Spatial relationships and operations with GeoPandas and Shapely**

**Lab session 3: OpenStreetMap and Street Network Analysis**

**Lab session 4: Mobility Analytics**

## **Prerequisites**

Basic knowledge of the Python language, virtual environments and Jupyter

## **Teaching form**

12 hours conducted in in-person delivery mode

12 hours of laboratory conducted in interactive delivery mode

## **Textbook and teaching resource**

Slides and notes provided by lecturers

## **Semester**

Second semester

## **Assessment method**

The course will be evaluated through an essay and an oral presentation on a self-selected smart city topic. Students, in groups of two, will write an essay in English (or Italian), covering problem description, data analytics, visualization, and policy recommendations. The essay should address relevant indicators, data selection, cleaning, spatial and temporal analysis, and prediction or classification models if needed. Ethical and social implications should also be considered. An oral presentation of the essay is required. Evaluation criteria include clarity and coherence of problem description, quality and relevance of data, accuracy and validity of analysis and visualization, robustness and reliability of models, effectiveness of policy suggestions, consideration of ethical and social implications, overall essay quality, quality of the in-person presentation.

## **Office hours**

Received by appointment to be arranged by e-mail

**Sustainable Development Goals**

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