

# Smart City

TAUGHT IN FRENCH



## / AIMS

The major in Smart City aims at training ESEO engineers to be proficient in:

- Processing the data pipeline (from sensors to decision making)
- Collecting data with connected sensors or IoT;
- Transporting data through city networks;
- Optimising energy distribution by smart grid;
- Storing data on dedicated server or cloud/distributed infrastructures;
- Analysing data with Data Science, Artificial Intelligence or simulation.

The field is constantly expanding and requires not only strong technical expertise but also human skills like monitoring, involving municipalities and citizens, and many more besides.

## / ACQUIRED SKILLS

You will be capable of interpreting and using urban data, designing «smart» buildings with home automation and BIM. You will also be familiar with the various related technologies.

Furthermore, you will be involved in the development of the smart city and the design of the future urban solutions, such as optimising energy management, analysing city data, improving transport flows and providing solutions to new uses.

## / CAREER OPPORTUNITIES

You will have access to positions such as IT Project Manager, Systems Administrator, Design Engineer, Metropolitan Project Manager, Information System Analyst.

## COURSE UNITS

### / SEMESTER 8

The course is based on 2 main areas:

- A core curriculum including Industry 4.0 and Digital Health majors with a balanced combination of hard sciences, data collection, processing and analysis;
- A 112-hour project related to the major chosen in S9.

#### Course Units common to all three majors:

- **Smart City project:** 112h -10 ECTS
- **Data Science:** 28h - 3 ECTS
- **Instrumentation:** 28h - 2 ECTS
- **Internet of Things:** 28h - 3 ECTS
- **Big Data and Security:**  
28h - 3 ECTS - The digital information cycle
- **Artificial Intelligence 1:**  
28h - 3 ECTS - Methods and neural networks
- **Augmented Reality / Virtual Reality:** 28h - 2 ECTS
- **English:** 28h - 2 ECTS
- **Transversal skills:** 28h - 2 ECTS

### / SEMESTER 9

The course is divided into 3 areas:

- A core curriculum with 3 Course Units to cover in depth the various scientific concepts related to collecting, processing, analysing and storing data
- A specific core of 5 Course Units related to the chosen major
- A 168-hour industrial final year project

#### Course Units common to all three majors:

- **Distributed Infrastructure:** 28h -2 ECTS - Large scale infrastructures, Quality of Service, Cloud computing
- **Flow Optimisation:** 28h -2 ECTS - Evolutionary Algorithms
- **Efficiency and Environment:** 28h - 2 ECTS - Decision-making tools (Predictive maintenance, diagnostics) / Energy and environment (Energy efficiency, Green IT)

#### Specific Course Units in Smart City:

- **Urban Hypervisor:** 28h - 2 ECTS
- **Home Automation and BIM:** 28h - 2 ECTS
- **Smart Grid – Energy Distribution:** 28h -2 ECTS
- **Simultaneous Localisation and Mapping – Cartography – GPS Localisation – SLMA:** 28h -2 ECTS
- **Urban Environment Knowledge:** 28 h - 2 ECTS
- **Final Year Project:** 168h - 14 ECTS

