

IDENTIFICATION

Course code : DAT503
ECTS : 1

DURATION

Lectures : 4
Tutorial classes : 10
Labs : 0
Total : 14

Project :
Personnal work :

ASSESSMENT

A knowledge assessment and a lab report.

TEACHING MATERIALS

Slides and practical work sheets.

LANGUAGE

English

CONTACT

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Modifié le : 14 juillet 2026

UE : UE5-DATA

COURSE : Geographic Information System (GIS)

SCOPE OF THE COURSE

OBJECTIVES

The aim of this course is to provide the necessary concepts in geographic information systems to efficiently manipulate this data within IoT projects or spatial data analysis projects.

COMPETENCE AND SKILLS

Perform exploratory data analysis Visualize data

PROGRAM

Spatio-temporal Information Systems

- Spatio-temporal data and spatio-temporal modeling ;
- Spatial indexing ;
- Spatial queries ;
- Spatial integrity constraints ;
- GIS interoperability ;
- Major Geographic Information Systems (GIS) on the market.

Tele-geomatics

- Telecommunications geomatics ;
- Modern positioning systems (GPS, etc.) ;
- Real-time decision-making ;
- Information exchange between geographically distributed sites.

Applications

- Overview of potential applications : Natural disaster and emergency management, precision agriculture ; forestry ; health and public safety ; mobility information and tele-geomatics ; navigation and monitoring in transportation ; oceans and coastal areas ; land and wetlands.
- Examples of specialized applications (e.g., real-time volcano monitoring) ;
- Examples of web-based applications (e.g., hazardous materials traffic management).

BIBLIOGRAPHY

Geographic Information Systems : Course and exercises with Grass and Qgis

REQUIREMENTS

Python programming, basic database knowledge, high school-level geometry.