

IDENTIFICATION

Course code : E2CP413
ECTS : 2.5

DURATION

Lectures : 8
Tutorial classes : 8
Labs : 8
Total : 24

Project :
Personnal work :

ASSESSMENT

2 Written exams (2h/2h) + 1 Lab report

TEACHING MATERIALS

LANGUAGE

English

CONTACT

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UE : INFORMATIQUE

COURSE : Introduction to Data Analysis

SCOPE OF THE COURSE

OBJECTIVES

- Process and analyze data.
- Store and use data.
- Learn SQL language and relational databases.

COMPETENCE AND SKILLS

- **Analyze** and **process** data from structured or unstructured sources.
- **Model** data by identifying entities, attributes, and relationships.
- **Use** the SQL language to create, query, and manipulate relational databases.
- **Store** and **exploit** data efficiently using a database management system (DBMS).
- **Verify** the consistency, integrity, and quality of the manipulated data.

PROGRAM

- Introduction to databases : concepts, roles, and types of DBMS.
- Data modeling : entities, attributes, relationships, and entity-relationship diagrams.
- Transition from the conceptual model to the relational model : primary and foreign keys.
- Creating a database and tables using the SQL language.
- Inserting, modifying, and deleting data (INSERT, UPDATE, DELETE).
- Simple selection queries with SELECT, WHERE, ORDER BY.
- Advanced queries : joins, subqueries, and aggregate functions.
- Integrity constraints, indexes, and user management.
- Introduction to normalization and query optimization.
- Synthesis project : design and operation of a complete database.

BIBLIOGRAPHY

REQUIREMENTS

- Algorithmic and Programming
- Programming in C and C++