

Programming and Databases

1. **Course number and name:** 020IBDCS1 Programming and Databases

2. **Credits and contact hours:** 4 ECTS credits, 2x1:15 contact hours

3. **Name of instructor:** Ibrahim Kiwan

4. **Instructional materials:**

- PowerPoint
- In-class problems
- Practical work

5. **Specific course information**

a. Catalog description:

This course presents the foundations of object-oriented programming in order to be able to develop applications that include databases. It will acquire skills in the field of object programming and databases and that of their implementation. This course will be divided into three phases:

In the first phase:

Present the C# language and the fundamental concept of object programming.

In the second phase:

Present the fundamental concept of relational databases

Specify the fundamental concepts of the establishment and the use of databases in the relational context - Optimization of requests, SQL, PL/SQL language, triggers, stored procedures and views under Oracle, MySQL or PHPMYSQL.

b. Prerequisites: 020IF2NI3 Programming 2

c. Required/ Selected Elective/Open Elective: Required

6. **Educational objectives for the course**

a. Specific outcomes of instruction:

- Understand the logic of object programming
- Implement computer programs in C#
- Designing database structures through functional dependencies
- Normalize a database
- Implementing a database
- Manipulate, update and extract data
- Manipulate views in a DB
- Handling triggers in a DB
- Apply the life cycle of a DB, namely: design, implementation and use of PhpMyAdmin, ORACLE or Microsoft SQLSERVER
- Set up an IT solution using the C# language integrating a database

b. PIs addressed by the course:

PI	1.1	1.2	1.3
Covered	x	x	x
Assessed	x	x	x

7. Brief list of topics to be covered

- Introduction to object programming - classes and objects - attributes, class constructor and methods. Classes and inheritance.
- The relational model - Functional dependencies - Normal forms - Theory of construction of a relational database - Modeling of entity -association data, SQL (LDD, LMD), PL/SQL, Stored procedures and functions, views and triggers.