BACHELOR'S PROGRAM IN INFORMATION SYSTEMS

1. General Description :

The Bachelor's in Information Systems (IS) at the University of Oran 1 is a **6-semester** (3-year) program combining theoretical and practical training in computer science, data management, networking, and engineering sciences. The program aims to train professionals capable of designing, developing, and managing complex IT systems. Courses are organized into **core (fundamental)**, **methodological**, **exploratory (Discovery)**, and **cross-disciplinary (transversal) units**, covering areas such as:

- **Mathematics** (analysis, algebra, probability).
- **Computer Science** (algorithms, programming, computer architecture).
- **Information Systems** (databases, networks, software engineering).
- **Advanced Applications** (artificial intelligence, cybersecurity, web development).

2. Context and Program Objectives

This program aligns with the rapid evolution of information technologies, which play a central role in modern economies and organizational management.

- **Primary Objective**: Train professionals to understand the technical and organizational challenges of information systems.
- **Key Focus**: Develop analytical and technical expertise, along with the ability to innovate and adapt to technological advancements.

3. Targeted Competencies

By the end of the program, students will be able to:

- Master foundational mathematical and computational tools and apply them to solve complex problems.
- Design, develop, and maintain information systems tailored to organizational needs.
- Analyze, model, and optimize IT and decision-making processes.

4. Key Program Features

- **Credits**: Courses range from 2 to 6 credits, with a total of **180 credits** required over 6 semesters.
- **Weighting**: Coefficients reflect the relative importance of courses.

- **Assessment**: Hybrid system with exams (60–100%) and continuous assessment (fixed 40%).

- **Pedagogy**: Nearly **95% of courses include practical work** in languages such as C, C++, Java, PHP, and Prolog, along with group mini-projects.

- **Final Project**: Modeling, design, and implementation of an information system (Semester 6).

5. Admission Requirements and Procedures

- **Academic Level**: Scientific or technical baccalaureate.

- **Specific Prerequisites**: Proficiency in written/spoken French and basic English.

- **Process**: Admission via application review.

6. Core/Fundamental Courses

- **Foundational Computer Science**: Algorithms & Data Structures 1–3, Machine Architecture.

- **Mathematics**: Analysis 1–2, Algebra 1–2, Probability & Statistics.

- **Operating Systems 1–2**: Process and memory management, Unix/Linux systems.

- **Databases**: Relational models, SQL, normalization.

- **Networking**: TCP/IP protocols, OSI architecture, socket programming.

7. Specialized Courses

- **Graph Theory**: Applications in optimization and modeling.

- **Software Engineering**: UML design.

- **Cybersecurity**: Cryptography, PKI systems.

- **Artificial Intelligence**: Expert systems, inference engines.

- **Mobile Applications**: Android development (Java/XML).

- **Semi-Structured Data**: XML, XQuery, NoSQL databases.

8. Language of Instruction

- **Primary Language**: French (lectures, materials, exams).

- **English**: Integrated through transversal modules like "Scientific Terminology," "Scientific Writing," and English-language bibliographic references.

- **Foreign Language**: Enhanced English courses (written/oral expression).

9. Career Opportunities

Graduates pursue academic and professional opportunities in sectors such as:

- Design and development of information systems for private/public organizations.
- IT project management and systems consulting.
- Roles in software engineering, web/mobile app development, and cybersecurity.
- Applied research or advanced studies (e.g., specialized Master's programs).