

GENERAL DESCRIPTION OF THE MASTER WITH INTEGRATED BACHELOR'S DEGREE (MCIL) IN HEALTH TECHNOLOGIES

1. General Description of the Program:

The Master with Integrated Bachelor's Degree (MCIL) in Health Technologies aims to train highly qualified professionals at the intersection of engineering, health sciences, and information technology. This interdisciplinary program addresses the growing demand for innovative solutions in the fields of medical devices, e-health, biomedical data management, and healthcare systems.

Graduates are trained to design, develop, and manage technological solutions in the healthcare sector, particularly in hospitals, research centers, and related industries.

2. Program Objectives and Skills:

- Objectives:

- Equip students with a strong scientific and technological foundation.

The Biomedical Engineering (GBM) program is structured around three main competencies: IT, networks, and security; Electronics and instrumentation; Medical and health. The program is designed to meet the needs of the hospital and healthcare sectors by training qualified professionals for the diagnosis and expertise of biomedical equipment and environments. It also includes a research and professional training dimension in the field of health. The curriculum spans 10 semesters, combining theoretical courses, practical work, internships, and personal projects.

- The goal is to train experts in health technologies: medical imaging, data processing, telemedicine, cybersecurity, and healthcare systems management.
- Foster entrepreneurship and innovation in health technology fields.

- Targeted Skills:

- Design and manage healthcare IT systems and medical devices.
- Develop mobile health applications, telemedicine platforms, and secure systems.
- Analyze and process biomedical data.
- Understand ethics, regulations, and business strategies related to health technologies.

3. Admission Requirements:

Prerequisites:

- a. Strong knowledge in mathematics, physics, computer science, and fundamental health sciences.

- b. Candidates for the integrated program are selected based on their high school GPA, which must be at least 14/20.

Admission Procedure: Submission of the candidate's academic file.

4. Main Program Components:

- a. **Duration:** 5 years (10 semesters)
- b. **Total Credits:** 300 ECTS
- c. **Structure:**

Semesters 1 to 6: Fundamental sciences, computer science, electronics, and health sciences.

Semesters 7 to 10: Specialized courses in health technologies, including projects, internships, and research.

Examples of Core Subjects:

Mathematics 1, 2, 3 / Applied Mathematics

Physics 1, 2 / Physical Structures

Thermodynamics / Numerical Methods

Probability and Statistics

Computer Science (Programming, Simulation, Systems, and Networks)

Electronics and Electrical Engineering

Signal Processing / Sensors / Measurement Systems

Examples of Specialized Subjects:

Medical Imaging and Anatomy / Physiology

Health Information Systems (HIS), Interoperability Platforms

Telemedicine and Patient Monitoring

Cloud Platforms and Health Data Storage

Cybersecurity of Medical Data

Real-Time Communication Systems

Serious Games for Health

Wireless Technologies in Hospital Settings

Mobile Application Development for Health Platforms

Artificial Intelligence in Health

Human-Machine Interface (HMI) Design

Virtual and Augmented Reality in Health

Examples of Projects and Internships:

- i. Personal Initiative Projects (1 to 4 weeks): Practical and progressive projects integrated into each year to gain hands-on experience.
- ii. Situational Projects (1 to 6 weeks): Practical projects within hospital settings.
- iii. Internships: Minimum of 6 to 12 weeks in healthcare or technology companies.
- iv. Final Year Project (FYP): Applied research or product development in a health technology field.

5. Career Opportunities:

Graduates can pursue careers as:

- a. IT specialists in healthcare systems
- b. Innovation project managers in health
- c. Telemedicine developers / Mobile health application developers
- d. Employment opportunities in public health institutions, hospitals, startups, and multinational companies in the health technology sector.
- e. They are also well-prepared to pursue doctoral studies in related fields.

6. Language of Instruction:

The Master with Integrated Bachelor's Degree (MCIL) is primarily taught in French; however, several courses are offered in English or sometimes in a hybrid format.