



**MedTech**  
Mediterranean  
Institute of Technology



# Executive Master Digital Health and AI



**Welcome**



# President's message

The strategic location of Tunisia in the heart of the Mediterranean combined with the diversity of its cultural heritage constitute major assets for the development of a regional hub of educational excellence.

It is in this framework that we have developed the South Mediterranean University (SMU).

On behalf of all members of our management team, we want to make your education at SMU a life changing experience and wish you success in your drive for professional excellence.

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**Mahmoud TRIKI,**  
**Founder & President, SMU**



# Shape your **future** at MedTech



## Our vision

MedTech aspires to be a regional hub of excellence in engineering education by fostering innovative learning and societal impact.



## Our mission

MedTech is committed to train highly qualified engineers capable of contributing and leading innovative ventures in today's globalized world.



## Our values

• Diversity

• Excellence

• Integrity

• Creativity

• Care



## Major Achievements

- Internationally accredited Engineering programs by ABET
- Partnerships with top ranked universities (University of Michigan, HEC Montréal, Oakland University, etc.)
- State-of-the-art facilities

# Our **learning** **strategy**

MedTech implements an adaptive learning strategy that offers students a life changing experience.

## Digital

MedTech is facilitated with technology, information and instructions that are enhanced using various applications, tools and resources to improve the learning experience.

## Active

Our active pedagogy allows our students to be continuously involved in the learning process through individual and group activities, bootcamps, simulation games enabling them to develop a variety of skill sets that differentiate our graduates on the job market.

## Interdisciplinary

By combining our curricular objectives to different disciplines, we help our students acquire the knowledge and skills necessary for their personal and professional development.



# The **Executive Master in Digital Health and AI** at a glance

In the dynamic healthcare landscape, the convergence of Digital Health and Artificial Intelligence (AI) is reshaping how we understand and deliver healthcare globally. Digital health technologies and AI emerge as transformative allies, offering innovative solutions to enhance patient outcomes, streamline workflows, and redefine the healthcare delivery. Notably, the importance of digital health extends universally, playing a pivotal role in overcoming disparities and improving access to quality healthcare worldwide.

## The Program

The objective of the program is to train professionals from both the Healthcare and Engineering sectors and equip them with the necessary tools and competencies for leading Digital Health transformation projects while understanding the challenges in designing and developing AI-driven digital health solutions, with assurances of their ethical, safe, and effective deployments.

The program consists of modules and workshops aiming at:

- Develop artificial intelligence and Analytics techniques to integrate them into fast, optimal and low-cost digital health solutions.
- Overcome governance, interoperability, and data security challenges faced in health digitalization projects.
- Develop communication and change management skills.
- Operate and lead in a multidisciplinary environment.

## The Format

The Executive Master in Digital Health and AI is a part-time program, designed to tailor the work and life commitments of participants. Classes meet four days a month (Thursday through Sunday from 9:00 AM to 6:00 PM) over a 17-month period, followed by three additional months dedicated to the final project.





# Program at a glance



  
Duration  
**17 months**

  
Modules  
**15**

  
Final project  
**1**

  
Workshops  
**5**

  
Course per month  
**1 or 2**



## The program key differential values

-  **Strong methodological approach** facilitated with digital tools to achieve efficient coordination of processes, workflows, people, assets, and technology that Digital Health requires.
-  **Tailored learning pathways** to meet the needs of professionals from different sectors of the digital transformation of Health, Health professionals, engineers, technicians, developers and managers.



## Participant profiles

# 1.

The program is aimed at experienced professionals who are expected to manage Digital Health and AI projects, including: Medical doctors, pharmacists, engineers, technicians, statisticians, computer scientist and health structures managers.



# 2.

Good English proficiency is required to enroll in the program. Applicants are interviewed to assess their motivation, potential and capacity to benefit from the program.



# 3.

Each class is composed of highly diversified participants (activity sector, age, gender, nationality, and educational background) to offer a unique learning experience and opportunities for networking.









# Outline of the program

## Term 01

### HARMONIZATION PERIOD

➔ For Engineers and participants without a biological background

#### INTRODUCTION TO PRINCIPLES OF MEDICINE AND HEALTHCARE SYSTEMS

Prepares engineers and non-medical students to understand the fundamentals of health care, to be able to communicate with health care professionals, and to become familiar with the health care jargon, environment as well as the healthcare system, and health economics.

➔ For Health Professionals

#### ICT LITERACY AND MATH FUNDAMENTALS

Enables participants to become more comfortable with digital tools and simple quantitative methods depending on their needs. It introduces numerical and computational tools necessary for problem solving skills in a digital environment.

### MEDICAL SOFTWARE ENGINEERING AND AGILE METHODS

Introduces students to software development phases, stakeholder communication, and collaborative learning of best practices, emphasizing skills in addressing customer needs, using development tools, and incorporating non-technical aspects like project management and teamwork. The module offers practical application in healthcare software through simulated real-world projects.

### INTRODUCTION TO DATA SCIENCE FOR HEALTH CARE

Establishes a statistical foundation for data science in healthcare, concentrating on key principles of data analysis and interpretation. With a specific focus on healthcare applications, students gain hands-on experience in statistical methods and visualization techniques. The emphasis is on utilizing statistical approaches to uncover insights and enhance decision-making within the healthcare domain.

### DIGITAL PROJECT

Prepares future health digitalization leaders to work within a multidisciplinary team, to formulate project and to implement its functionalities with respect to the project requirements and deadlines.



# Outline of the program

## Term 02

### **DIGITAL HEALTH INFORMATION SYSTEM**

Explores essential Information Systems (I.S.) concepts and their role in healthcare decision-making. It focuses on integrated healthcare solutions, project management skills, and addresses ethical, social, and security issues in Information Systems for healthcare. Participants gain insights into current I.S. trends relevant to the healthcare domain.

### **ADVANCED DATA ANALYTICS FOR HEALTHCARE**

Prepares learners to be able to conduct a data analysis study in the field of healthcare, starting from defining a research question, gathering data, preprocessing it, modelling and evaluating the quality of models. The course integrates hands-on experience with relevant tools and techniques, offering a comprehensive introduction to leveraging data science for insights and improvements in healthcare practices.

### **DIGITALIZATION MANAGEMENT**

Combines Project Management and Change Management. Participants learn to plan and execute digital projects efficiently, exploring methodologies and collaboration tools. The Change Management component focuses on leading teams through digital transitions and fostering a transformation-

ready culture. Together, these courses equip digital leaders to manage digital initiatives and navigate organizational change effectively.

### **HEALTH LAW & CSR**

Explores the connection between legal frameworks, ethical considerations, and societal obligations in healthcare. Students examine key legal concepts, regulations, and the impact on patient care, privacy, and equitable access to healthcare. Through case studies, the course prepares students to navigate ethical challenges and understand their role in fulfilling social responsibilities within the healthcare system.

### **EFFECTIVE TECHNICAL COMMUNICATION**

Develops participants' abilities in writing and presenting technical communication in a clear and professional manner. Likewise, participants will develop their ability to comprehend relevant technical communication, written and oral, within their fields.



## Outline of the program

# Term 03

### COMPUTATIONAL EPIDEMIOLOGY AND SIMULATION

Equips students to proficiently study and develop computational techniques and tools. It focuses on modeling, simulating, predicting, forecasting, surveilling, mitigating, and visualizing the spread of diseases. Through this program, students will gain the skills necessary to contribute effectively to the field of epidemiology by leveraging computational methods for a comprehensive understanding and management of disease dynamics.

### SENSING TECHNOLOGY FOR DIAGNOSTICS AND MONITORING

Provides a concise yet comprehensive overview of contemporary healthcare solutions including cutting-edge diagnostic tools, real-time monitoring, and the seamless integration of sensors into everyday environments. The module emphasizes cloud technology for efficient data storage and processing, enabling advanced analysis. Telemedicine concepts are included, highlighting the role of technology in remote diagnostics.

### MEDICAL INFORMATION PROCESSING

Focuses on the crucial role of signal and image processing in healthcare. Students delve into advanced techniques for extracting meaningful

information from medical signals and images. The course covers applications such as medical imaging, signal analysis for diagnostics, and the enhancement of medical data through processing methodologies.

### INTELLIGENT SYSTEMS FOR HEALTHCARE

Equips students to proficiently apply specific mathematical techniques to solve problems in biomedical signals. Through hands-on applications and case studies, students gain a practical understanding of how AI and machine learning contribute to enhancing medical information processing in diverse healthcare settings while being aware of their limitations.

### RESEARCH METHODS

Develops students' knowledge and understanding of the role and conduct of quantitative and qualitative research methods in healthcare. Through this module, students acquire necessary skills and practices to critically evaluate research and apply robust methods to address healthcare challenges.





# Outline of the program

## Term 04

### FINAL PROJECT

Through immersive capstone projects, participants develop a hands-on understanding of how AI and machine learning methodologies can significantly elevate medical information processing across various facets of digital health. This exploration is enriched by an awareness of the nuanced limitations inherent in these advanced technologies, fostering a comprehensive and practical approach to their application in real-world healthcare scenarios.









South  
Mediterranean  
University

MSB . MedTech . LCI



[✉ dorra.louati@medtech.tn](mailto:dorra.louati@medtech.tn)

[📍 Campus SMU : Les jardins du Lac 2, Tunis](#)

[☎ \(+216\) 23 999 123](tel:+21623999123)

[www.smu.tn](http://www.smu.tn)

