2024

CURRICULUM

Managing Digital Transformation in the Health Sector

90 ECTS

ManagiDiTH
ADVANCED DIGITAL SKILLS

Managing Digital Transformation in the Health Sector

In the dynamic landscape of contemporary healthcare, the necessity of digital transformation is high. As the European Union strives to fortify its healthcare systems, the collaborative effort of our Master's programme "Managing Digital Transformation in the Health Sector" emerges as a pivotal initiative. This EU-funded master's programme, orchestrated through a partnership between prestigious institutions including Laurea University of Applied Sciences in Finland, ISCTE - Instituto Universitário de Lisboa in Portugal, and Aristotle University of Thessaloniki in Greece, embodies a strategic response to the pressing challenges and opportunities inherent in digital healthcare integration.

At its core, this interdisciplinary pursuit represents an interdisciplinary link wherein technology, policy, and healthcare intersect. Through an academic lens, it outlines the multifaceted dimensions of digital transformation, ranging from the implementation of state-of-the-art health informatics systems to the ethical implications of data-driven decision-making in patient care. Moreover, it creates a hands-on stance towards harmonizing contrasting healthcare practices across EU member states, thereby fostering a cohesive framework encouraging seamless interoperability and information exchange.

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In its essence, "Managing Digital Transformation in the Health Sector" embodies the essence of scientific and academic rigor, converging theoretical insights with practical applications to forge a path towards a digitally empowered healthcare landscape. As the EU charts its course towards a more equitable, efficient, and patient-centric healthcare field, this collaborative project stands as a mark of progress, illuminating the path towards a healthier future.

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Studying in the programme

Students learn various topics and develop critical thinking skills by solving real-world problems in online curricular units, using various pedagogical approaches suitable for an online environment. For example, a curricular unit could consist of weekly online meetings, and these meetings will contain sessions in which the students discuss the issues with their peers and work online with group assignments to develop a solution.

The ManagiDiTH online Moodle environment will provide continuous communication and timely feedback by teachers of the respective curricular units. This communication channel between teachers and each and every student will enable and support different learning modalities from anywhere.

ManagiDiTH students have a great opportunity to study in a multicultural learning environment where the number of students can be up to 240 in total. This will offer opportunities to network widely among students from various backgrounds and different EU countries.

The Master's programme has three main components:
1. Health sector skills
2. Societal skills
3. Digital skills

There are two specialization branches. One in **Data Science** and the other in **Interoperability.** Students may choose the branch they want to specialize in according to their individual needs, interest, background and previous knowledge acquired on specific topics

The programme is composed of 10 curricular units of 6 ECTS each:
- 6 mandatory
- 4 optional

10 x 6 ECTS = 60 ECTS, plus the Master's thesis unit which is 30 ECTS.

Curricular units

Mandatory courses

There are six mandatory courses, each one with the worth of 6 ECTS. In the following section you will find information about each curricular unit, its code*, name and name(s) of the lead teacher(s), as well as the study objectives of each unit.The studies begin with mandatory orientation days and there is a mandatory Master's thesis unit.

MB00 Orientation days: "Introduction of ManagiDiTH Master Program— managing studies at Master cycle level"
Ruusa Ligthart & Virpi Kaartti (LAUREA)

Objectives
Students discover important practicalities on how to manage their Master's studies. Additionally, they explore the ManagiDiTH online learning environment and study paths.

MT18 Master's thesis
Margarida Santos (ISCTE)

Objectives
Allow students a first research experience followed by a senior person, during which they mobilize the theoretical and methodological knowledge acquired in the taught part of the program and apply them critically to a thematic issue emerging from the curriculum.

Health Sector Skills

MH01
Organisations and Services in the Health Sector
Kristiina Helminen & Hannu Tikkanen (Laurea)

Objectives
Equip students with the ability to recognize and understand the structures of diverse health and well-being services in an international context, covering regulations, objectives, and challenges.

MH03
Social and Individual approach in Health
Markus Kanerva & Kaisa Hytönen (Laurea)

Objectives
Explore the role and limitations of digital technology in individual health and its societal impacts, as well as introducing fundamental rules and regulations concerning health services and preventive care in public health.

Societal Skills

MS07
Managing the Digital Transformation in Healthcare
João Carlos Ferreira (ISCTE)

Objectives
Understand digital transformation trends, technologies, and strategies in the healthcare industry, providing them with the knowledge and skills needed to navigate and manage such initiatives within healthcare organizations.

MS09
Service Design
Virpi Kaartti & Anna Salmi (LAUREA)

Objectives
Understand the concepts and principles of systemic service design. Acquire a comprehensive understanding of applicability of service design in healthcare through online studies, interactive lectures, case studies, group discussions, and hands-on experiments.

Digital Skills

MD10
Health Data and Information Systems
João Carlos Ferreira (ISCTE)

Objectives
Understanding the impact of health data and information systems on healthcare quality, safety, and cost-effectiveness, as well as the emerging trends and technologies in the field.

MD17
Health Data Classifications and Exchange formats
Panagiotis Bamidis (AUTH)

Objectives
Familiarize students with concepts, technologies, and methodologies behind health data standards, introduce them to relevant worldwide standards and organizations, and provide an understanding of various technologies and methodologies through practical examples, fostering interdisciplinary collaboration in analyzing healthcare classifications and structured data.

**The CU code reads as following: M or O for mandatory or optional, followed by H, S or D for Health Skills, Societal Skills or Digital Skills, B for boarding module and T for thesis. Then followed by increasing sequence of numbers.*

Curricular units

Optional courses

For optional courses the students choose four courses, each one worth 6 ECTS. In the first semester students choose one optional course from Health Sector Skills and one optional course from Societal Skills.

In the second semester students will choose a branch under the Digital Skills courses: the interoperability branch or the data science branch. Students will then need to choose two optional courses from their chosen branch.

In the following section you will find information about each curricular unit, its code*, name and name(s) of the lead teacher(s), as well as the study objectives of each unit.

Health Sector Skills

OH02
Healthcare Resource Management
Konstantinos Diamantis (AUTH)

Objectives
Equip students with a thorough understanding of resource management principles in the health sector, promoting a holistic grasp of the subject.

OH04
Regulation, Legislation and Structures in health
Mikko Julin, Sari Sarlio-Siintola & Outi Ahonen (LAUREA)

Objectives
Enhance students' ability to analyze various models of well-being production, examining how well-being, its promotion, and prevention align with the values of the EU and fundamental rights at both EU and member state levels.

Societal Skills

OS05
Technology and Society
Anna Salmi & Hannu Tikkanen (LAUREA)

Objectives
Comprehensive understanding of the interconnections between science, technology, and society using diverse cases and examples, organized thematically.

OS06
Ethics and Privacy in Health
Graça Canto Moniz (ISCTE)

Objectives
Understand key references in the digital domain, particularly in Ethics and Privacy, to enable informed and ethical interventions in promoting measures and policies during the healthcare sector's digital transformation.

OS08
Management, Innovation and Entrepreneurship in Healthcare
Evdokimos Konstantinidis & Panagiotis Bamidis (AUTH)

Objectives
Equip students with the necessary knowledge and competences to thrive in the complex and ever-evolving healthcare industry. Develop a strong understanding of business planning, innovation, and entrepreneurship within the healthcare context.

Curricular units

Digital Skills

Interoperability branch

OD13
Technologies in Interoperable Ecosystems in Health
Stergiani Spyrou (AUTH)

Objectives
Provide students with a comprehensive understanding of the latest trends, technologies, and standards related to interoperability in the healthcare domain. The course aims to equip students with the knowledge and skills necessary to design, develop, and implement interoperable solutions that enable seamless and secure exchange of health information across different systems and stakeholders.

OD14
E-health and Telemedicine
Panagiotis Bamidis (AUTH)

Objectives
Develop a comprehensive understanding of the concepts and implications of e-health and telemedicine in the healthcare field. This includes exploring the role of digital technologies and telecommunication systems in transforming healthcare delivery.

OD15
Cybersecurity for Health Systems
Carlos Serrão (ISCTE)

Objectives
Prepare students to identify the specific cybersecurity threats and risks health systems need to face (IDENTIFY), learn about the appropriate mitigations that need to be implemented to protect them (PROTECT), learn the techniques and mechanisms that can detect menaces (DETECT), identify how to handle the appropriate measures to face attacks to health systems (RESPOND), and recover health systems to normal operation after attacks (RECOVER).

Data Science Branch

OD11
Data analytics and Machine Learning
Sancho Oliveira (ISCTE)

Objectives
Apply and understand various stages within the realm of machine learning. Recognize and locate crucial data points. Employ imputation techniques for data replacement and establish appropriate metrics. Identify and employ supervised and unsupervised algorithms suitable for health data analysis. Evaluate and interpret the performance of the various machine-learning algorithms on health data. Implement a machine learning pipeline in an ML toolkit.

OD12
Deep Learning and Computer Vision in Health
João Carlos Ferreira (ISCTE)

Objectives
Knowledge on modern computational methods for manipulating and analyzing images, with a focus on automatic knowledge extraction, covering techniques for feature extraction and deep learning, particularly convolutional neural networks.

OD16
Sensors for Medical Instrumentation and Signal Processing
Octavian Postolache (ISCTE)

Objectives
Acquire general knowledge about biomedical sensors (principle, characteristics, applications) in a medical context and the signal treatment associated in order to have relevant information from the measurement. Provide compentencies of bibliographic analysis and oral presentation.

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Co-funded by the European Union

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DIGITAL EUROPE PROGRAMME