

UNIVERSITÀ CATTOLICA del Sacro Cuore



**ALTEMS**

ALTA SCUOLA DI ECONOMIA  
E MANAGEMENT DEI SISTEMI SANITARI

# **Advanced course in assessment of the applications of artificial intelligence (AI) in healthcare**

2nd Edition 2024/2025



## Faculty

**Scientific Director:** Prof. Giuseppe Arbia

**Scientific Committee:** Prof. Giuseppe Arbia, Prof. Vincenzo Valentini, Prof. Americo Cicchetti, Prof. Fabrizio Massimo Ferrara, Ing. Ernesto Iadanza, Prof. Ira Hebold Haraldsen, Dr. Marco Marchetti, Dr. Teresa Petrangolini, Eng. Giovanni Arcuri, Prof. Wija Oortwijn

**Scientific coordinators:** Dr. Luca Tagliaferri, Dr. Rossella Di Bidino

**Tutor:** Sara Papavero (PhD Candidate)

## Course Learning Objectives

The Graduate School of Health Economics and Management (ALTEMS) proposes the first edition of the post-degree “Advanced course in assessment of the applications of artificial intelligence (AI) in healthcare”. The course aims to promote the use of the principles and methodology of Health Technology Assessment (HTA) to Artificial Intelligence solutions.

## Course Description

The aim of the course is to provide and share the tools for a multidisciplinary and multi-domain assessment of AI/ML-based healthcare technologies for the purpose of their optimal integration with care pathways.

Attention will be given to HTA methodology applied to AI and machine learning (ML) in the different stages of their development and adoption, including regulatory and assessment processes. Related topics will be addressed such as data management and analysis within the European Health Data Space.

In addition, experiences in the development and implementation of AI/ML-based technologies in healthcare will be presented.

## Syllabus

The course is divided into eight modules of 10 hours each for a total duration of 80 hours. The course is divided into modules that have the purpose of introducing and aligning the participants on the central themes of the course (HTA, AI, digital health), to deepen specific aspects and present experiences of development, use and multidimensional evaluation of AI.

Case studies will be presented.

The following topics will be addressed:



- Digital Health, Artificial Intelligence and Health Technology Assessment.
- The impact of AI for clinicians: Next generation of evidence-based medicine.
- Framework(s) for the assessment of digital technologies and in particular those based on AI.
- Regulatory aspects, reimbursement and sustainability of AI.
- Introduction to AI/ML models and clinical studies.
- Data management and analysis, with a focus on quality and reliability of data sources.
- Real world data, big data and the European Health Data Space.
- Analysis of economic impact.
- Analysis of the organizational impact of AI.
- Environmental impact assessment.
- Ethical implications of AI.
- Role of patients.

The course will be held in-person.

Some of the lectures can be made at distance in real time.

## Lecturers

- Prof. Giuseppe Arbia - Università Cattolica del Sacro Cuore, Roma – Direttore dell'Alta Scuola di Economia e Management dei Sistemi Sanitari, Università Cattolica del Sacro Cuore, Roma – Italy
- Prof. Americo Cicchetti - Ministero della Salute – Direttore della Programmazione Sanitaria
- Dott. Luca Tagliaferri – U.O.C. Radioterapia Oncologica – Gemelli Generator – Roma, Italia
- Dott.ssa Rossella Di Bidino – Responsabile "Laboratorio di Health Technology Assessment (HTA) ed intelligenza artificiale" - ALTEMS Alta scuola economia management sistemi sanitari - Direzione Tecnica, ICT e Innovazione Tecnologie Sanitarie - Fondazione Policlinico Universitario Agostino Gemelli IRCCS
- Prof. Fabrizio Massimo Ferrara – Coordinamento scientifico "Laboratorio sistemi informativi sanitari"- ALTEMS Alta scuola economia management sistemi sanitari
- Prof. Ira Hebold Haraldsen – Coordinatore Progetto Europeo AI-MIND – Oslo University Hospital
- Ing. Ernesto Iadanza - Senior Assistant Professor in Bioengineering (tenure-track RTD-b), Department of Medical Biotechnologies, University of Siena
- Prof. Wija Oortwijn - President at Health Technology Assessment international (HTAi) – Associate Professor Leiden University Medical Center - Senior Scientific Researcher Radboud University Medical Center
- Dott.ssa Elena Petelos - Health Technology Assessment international (HTAi)
- Dott. Causio Francesco Andrea – Vicepresidente Società Italiana Intelligenza Artificiale in Medicina
- Prof. ssa Fidelia Cascini - Dipartimento di Scienze della vita e sanità pubblica, Università Cattolica del Sacro Cuore - Sede di Roma
- Prof. Evis Sala - Fondazione Policlinico Universitario Agostino Gemelli IRCCS e Università Cattolica del Sacro Cuore - Sede di Roma
- Prof. Dario Sacchini - Professore Associato Dipartimento di Sicurezza e Bioetica, Università Cattolica del Sacro Cuore - Sede di Roma
- Prof. Pietro Refolo – Professore Associato Dipartimento di Sicurezza e Bioetica, Università Cattolica del Sacro Cuore - Sede di Roma

- Dott.ssa Sara Consilia Papavero – PhD candidate Università Cattolica del Sacro Cuore, Roma – Alta Scuola di Economia e Management dei Sistemi Sanitari, Università Cattolica del Sacro Cuore, Roma – Italy 
- Ing. Giovanni Arcuri – Direttore Tecnico, ICT e Innovazione Tecnologie Sanitarie - Fondazione Policlinico Universitario Agostino Gemelli IRCCS
- Dott. Marco Oradei - Responsabile "Laboratorio di Health Technology Assessment (HTA)" - ALTEMS Alta scuola economia management sistemi sanitari
- Ing. Lorenzo Leogrande - Dirigente Responsabile Unità di valutazione delle tecnologie e Innovazione, Fondazione Policlinico Gemelli – Past president, Associazione Italiana Ingegneri Clinici
- Dott.ssa Carmen Furno - Direzione Tecnica, ICT e Innovazione Tecnologie Sanitarie - Fondazione Policlinico Universitario Agostino Gemelli IRCCS
- Dott. Marco Marchetti - Dirigente Unità Operativa di Health Technology Assessment, Agenzia Nazionale per i Servizi Sanitari Regionali (Agenas)
- Dott. Entela Xoxi - Senior Scientific Advisor – Lecturer Alta Scuola di Economia e Management dei Sistemi Sanitari, Università Cattolica del Sacro Cuore, Roma – Italy
- Ing. Emmanouil Tsiasiotis - Alta Scuola di Economia e Management dei Sistemi Sanitari, Università Cattolica del Sacro Cuore, Roma – Italy
- Dott.ssa Teresa Petrangolini - Direttore Patient Advocacy Lab ALTEMS
- Dott. Eugenio di Brino - Alta Scuola di Economia e Management dei Sistemi Sanitari, Università Cattolica del Sacro Cuore, Roma –Co-founder Altems Advisory- Italy
- Dott. Michele Basile- Alta Scuola di Economia e Management dei Sistemi Sanitari, Università Cattolica del Sacro Cuore, Roma –Co-founder Altems Advisory- Italy
- Ing. Federico Cabitza - Università degli Studi di Milano-Bicocca
- Dott. Robin Vermeulen - Senior Scientist and Advisor Medical Technology - Radboud University Medical Center
- Dott. Stefano Paternello- Gemelli Generator, Fondazione Policlinico Universitario Agostino Gemelli IRCCS
- Dott. Loranzo Placidi - Fondazione Policlinico Universitario Agostino Gemelli IRCCS e Università Cattolica del Sacro Cuore - Sede di Roma
- Dott.ssa Anna D'Angelo - Fondazione Policlinico Universitario Agostino Gemelli IRCCS e Università Cattolica del Sacro Cuore - Sede di Roma
- Dott. Alessandro Sgambato - Gemelli Generator, Fondazione Policlinico Universitario Agostino Gemelli IRCCS e Università Cattolica del Sacro Cuore - Sede di Roma
- Dott.ssa Iben FASTERHOLDT – Odense University Hospital – Center for Innovative Medical Technology
- Ing. Alice Ravizza - Founder, InsideAi srl
- Prof. Vincenzo Valentini - Direttore Scientifico Gemelli Generator
- Prof. Zrubka Zsombor - Óbuda University – HECON Health Economics Research Center
- Rappresentanti dell'iniziativa RWE4Decisions (A Multi-Stakeholder EU Learning Network on Real-World Evidence (RWE))



## Prerequisites and Corequisites

The course is open for candidates with a university degree. They could be professionals who are not experts in the topics of the course, as well as experts who wish to deepen and update their knowledge and skills related to the assessment of digital health technologies and in particular those based on artificial intelligence. There will be lectures to introduce participants to the basics of HTA, AI/ML methods and data analysis.

The course is aimed at: researchers/consultants in the field of Health Technology Assessment or digital health; decision makers; clinicians and pharmacists a professional interest in HTA.

The maximum number of participants is 40.

The course will be activated with minimum 8 candidates.

## Planning

The modules will take place on Friday afternoon and Saturday morning, in the academic year 2024/2025 between March-November 2025. The course is located in Faculty of Economics of the Catholic University of the Sacred Heart - Rome. Attendance is compulsory (at least 80% of the lessons). The course is conducted in a partially hybrid format. The classes will be held in-person at the classrooms of the Università Cattolica del Sacro Cuore - Rome Campus. Participants will be able to attend remotely for a maximum of 4 modules (excluding the first and the last module).

## Agenda

Provisional Date	Topic	Brief description	Duration
March 14-15	Introduction to digital health, AI and HTA	Students will be introduced to the course and its main topics (digital health, artificial intelligence, HTA, data management). Main lecturers: Prof. Arbia, Prof. Cicchetti, Prof. Ferrara, Dr. Marchetti, Dr. Tagliaferri, Dr. Di Bidino	10 hours
April 4-5	HTA and sustainability of AI	The issues that will be addressed are: HTA and reimbursement processed, HTA frameworks for digital health, HTA patient perspective (introduction) and environmental impact assessment (introduction). In addition, case studies will be discussed. Main lecturers: Dr. Petrangolini, Dr. Di Bidino, representatives of HTAi/IFMBE/SIHTA.	10 hours
May 9-10	Impact assessment of AI (part I)	This module will cover aspects as: economical and organizational impact, ethical implications (i.e. explainability, trustworthiness), legal aspects of AI. In addition, case studies will be discussed. Main lecturers: Prof. Sacchini, Dr. Tagliaferri.	10 hours
June 6-7	Focus on AI	Students will be introduced to various AI/ML models and the reporting guidelines for trials involving AI solutions. The course will also cover and discuss the EU projects <a href="#">AI-MIND</a> and <a href="#">EDIHTA</a> , alongside an overview of the working group dedicated to the assessment of AI/ML technologies. Main lecturers: Eng. Iadanza, Prof. Arbia, Prof. Haraldsen.	10 hours
July 18-19	Impact assessment of AI (part II)	The issues that will be addressed are: AI and patients, environmental impact, the perspective on HTA of AI/ML developers. In addition, case studies will be discussed. Main lecturers: Dr. Di Brino, Dr. Tagliaferri.	10 hours
September 19-20	Data management and analysis	Big data, RWD/RWE and quality assessment of the data will be discussed. Then, the guided assessment of an AI/ML technologies will proceed. In addition, case studies will be discussed. Main lecturers: Dr. Xoxi, Prof. Ferrara, Prof. Arbia.	10 hours
October 10-11	HTA of AI along the TRL	Students will understand how the assessment of AI/ML and digital technologies could evolve along all the Technology Readness Levels. Then, the guided assessment of an AI/ML technologies will proceed. In addition, case studies will be discussed. Main lecturers: Eng. Arcuri, Dr. Furno, Prof. Arbia, Dr. Tagliaferri	10 hours
November 20-21	Assessment of an AI solution	The groups will be completed their guided assessment of an AI/ML technology and share the results of their assessment. Main lecturers: Prof. Arbia, Prof. Cicchetti, Prof. Ferrara, Dr. Marchetti, Dr. Tagliaferri, Dr. Di Bidino	10 hours

## Fees

The cost of the courses is € 1,800.

Special fees are defined for PhD candidates and scholarships are available and members of selected scientific societies (SIHTA-Italian Society of HTA, SIAM-Italian Society of AI in medicine, AIIC-Italian Society of Clinical Engineering).

## Final certification

A certification will be issued to participants that have completed the entire modules.

## Contacts

Unità Master, Dottorati e corsi specializzanti Roma

Tel.06.30154897 – Fax 06.30155846

[Segreteria.corsiperfezionamento-rm@unicatt.it](mailto:Segreteria.corsiperfezionamento-rm@unicatt.it)

[rossella.dibidino@unicatt.it](mailto:rossella.dibidino@unicatt.it)

Alta Scuola di Economia e Management dei Sistemi Sanitari

Università Cattolica del Sacro Cuore

Tel. 06.30155863 Fax 06.30155779

Largo Francesco Vito, 1 - 00168 Roma

<https://altems.unicatt.it>