

The course is jointly organized by the



UNIVERSITÀ  
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UNIVERSITÀ  
DEGLI STUDI  
DI MILANO

# AI

*Master Degree in*  
**Artificial Intelligence  
for Science and Technology**

## EDUCATIONAL PATHS

# 1<sup>st</sup> YEAR

EDUCATIONAL ACTIVITIES	CFU/ECTS
Advanced Foundations of Mathematics for AI	6
Advanced Foundations of Statistics for AI	6
Advanced Foundations of Physics for AI	6
Advanced Foundations of Artificial Intelligence Modulo 1: Artificial Intelligence Modulo 2: AI for Signal and Image Processing	12
4 Courses: mandatory courses of the application area selected by the student	30

## 2<sup>st</sup> YEAR

EDUCATIONAL ACTIVITIES	CFU/ECTS
Data-driven organizations and management	6
Advanced Foundations of Law and regulations in privacy and data protection	6
1 Course: elective course of the application area selected by the student in the 1 <sup>st</sup> year	6
Free-choice courses: 2 Courses chosen by students	12
Further linguistic competences	3
Stage: practical activities for the MS dissertation	6
MS Dissertation and defense	21

## Application Area 1: AI for Industry and Environment

MANDATORY EDUCATIONAL ACTIVITIES	CFU/ECTS
Systems for Industry 4.0 and environment (IoT)	6
Advanced data management and decision support systems	6
Advanced artificial intelligence, machine learning and deep learning	6
Sensing and vision for industry and environment Modulo 1: Intelligent sensing and remote sensing Modulo 2: Vision for industry and environment	12
<b>ELECTIVE EDUCATIONAL ACTIVITIES: select 1 course</b>	
Intelligent monitoring and control systems	6
Environmental monitoring and management	6



## Application Area 2: Intelligent Embedded Systems

MANDATORY EDUCATIONAL ACTIVITIES	CFU/ECTS
Embedded systems architectures and design	6
Advanced data management and decision support systems	6
Advanced artificial intelligence, machine learning and deep learning	6
Ambient intelligence	12
Modulo 1: Advanced human-system interfaces (6 CFU)	
Modulo 2: Ambient intelligence and domotics (6 CFU)	
<b>ELECTIVE EDUCATIONAL ACTIVITIES: select 1 course</b>	
Embedded systems for biomedical applications	6
Intelligent consumer technologies	6

## Application Area 3: Sensing and Signal/Image Processing for Healthcare and Environment

MANDATORY EDUCATIONAL ACTIVITIES	CFU/ECTS
Advanced computational techniques for big imaging and signal data	6
Machine learning for modelling Modulo 1: Supervised learning Modulo 2: Unsupervised learning	12
Signal and imaging acquisition and modelling in healthcare	6
Signal and imaging acquisition and modelling in environment	6
<b>ELECTIVE EDUCATIONAL ACTIVITIES: select 1 course</b>	
Physical sensors and systems for biomedical signals	6
Physical sensors and systems for environmental signals	6
Physical sensors and systems for biomedical imaging	6
Physical sensors and systems for environmental imaging	6

## Application Area 4: Complex Systems and Quantum Technologies

MANDATORY EDUCATIONAL ACTIVITIES	CFU/ECTS
AI models for physics	6
Machine learning for modelling Modulo 1: Supervised learning Modulo 2: Unsupervised learning	12
Statistical learning	6
Quantum simulation	6
<b>ELECTIVE EDUCATIONAL ACTIVITIES: select 1 course</b>	
Advanced statistical mechanics and disordered systems	6
Quantum information and algorithms	6
Statistical Mechanics of Neural Networks	6
Quantum computers and technologies	6



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