

ENGAGE.EU Certificate
Joint Programme in Digital Transformation

Competing in the Age of AI

Course Syllabus

Dr. Giorgio Piccardo

1-2 March 2024 & 8-9 March 2024

Course Abstract

Artificial intelligence (AI) makes it possible for machines to learn from experience, adapt to new inputs and perform human-like tasks. Most AI examples that you hear about today – from chess-playing computers to self-driving cars – heavily rely on deep learning and natural language processing. Using these technologies, computers can be trained to accomplish specific tasks by processing large amounts of data and recognizing patterns in the data. The aim of the course is to introduce the most important topics and current challenges both from a technological and a business point of view. Indeed, artificial intelligence has transformed the way people think, learn, and work in various areas, with every company seeking to introduce Artificial Intelligence in their domain. Studying AI and Machine Learning opens up a world of opportunities to create cutting-edge technologies in diverse sectors.

Learning Objectives

Upon completion of this course, the students should be able to...

- ...describe Artificial Intelligent systems and techniques
- ...explain the impact of Artificial Intelligence in business, leadership, and future jobs
- ...illustrate how to avoid data science traps
- ...define the blockchain technology
- ...judge a company's ability to implement AI and blockchain

Evaluation and Grading

Lectures will be conducted through standard face-to-face teaching. Towards the end of the course, students will have the opportunity to self-organize into groups and undertake small group projects, in which they will apply the AI tools discussed in class to solve a realistic

scenario (to be proposed by the students and approved by the teacher). The group project accounts for 100% of the grade, and the project material will be subject to evaluation. Alternatively, students can choose to prepare an individual essay on one of the topics discussed during the course, which also accounts for 100% of the grade.

The group project submission material includes:

- A summary (maximum 2 pages) of the scenario, the AI tools used to solve it, and some business considerations and applications.
- The collection of the AI tools used.
- A short PowerPoint presentation.

On the other hand, students who prefer the essay option must write between 10 - 12 pages, providing a comprehensive discussion about one of the topics discussed throughout the course.

The deadlines for submitting the group project and the essay will be provided on the first day of the course.

Readings

Mandatory Readings:

Lecture notes and slides made available by the Professor during the course.

Complementary Readings:

Kelleher, J. D., Mac Namee, B., & D'arcy, A. (2020). *Fundamentals of machine learning for predictive data analytics: algorithms, worked examples, and case studies*. MIT Press.

Tapscott, D., & Tapscott, A. (2016). *Blockchain revolution: how the technology behind bitcoin is changing money, business, and the world*. Penguin.

Gilchrist, A. (2016). *Industry 4.0: the industrial internet of things*. Apress.

Sessions

FIRST SESSION: 1 March 2024, 12 pm – 6 pm

Course Opening: Introduction to AI.

Discussion of Lecture Unit 1: The AI first company

Tracing digitization of the economy and the emerge of AI; Understanding the impact of AI on business operating models; Evolving leadership in the era of AI; Building and scaling a responsible AI framework; Ensuring privacy and cybersecurity; Avoiding algorithmic bias and managing risk related to inclusiveness and transparency; Assessing AI readiness and maturity.

SECOND SESSION: 2 March 2024, 9 am – 4 pm

Discussion of Lecture Unit 2: Automation and AI

Compare success and failures AI; Suggest new areas of innovation for existing digital capabilities; The impact that AI and automation will have on jobs.

THIRD SESSION: 8 March 2024, 12 pm – 6 pm

Discussion of Lecture Unit 3: Disruption from AI and blockchain technologies

What makes applications of AI and blockchain technology truly disruptive; Examine what makes an industry ready for transformation from either AI or blockchain technology.

FOURTH SESSION: 9 March 2024, 9 am – 4 pm

Discussion of Lecture Unit 4: Overcoming AI challenges

Overcoming the challenge of developing strategy in today's AI landscape; Comparing AI-first firms to traditional product and/or service-based organizations; Taking full advantage of learning effects as you scale your operations.

About the Lecturer

Dr. Giorgio Piccardo graduated in Computer Science at Sapienza University of Rome in 2005. Since 2016 he serves as freelance and contract engineer for several companies, universities, and startups, in positions such as full-stack web developer, software architect, smart contract developer, UI/UX designer and data analyst. Since 2018 he also serves as professional formation and mentoring for several companies.

He also served as Research Fellow (Dept. of Computer Science at Sapienza University of Rome) 2017-2018 within the EU project PRIDE.

Since 2016 he is regular lecturer at University of Rome "Tor Vergata" and since 2018 he is regular lecturer at LUISS University in Rome. His teaching background involves courses on high-level computer programming, computer science, blockchain technologies, NFT and smart contracts.