Freie Universität Bozen
Libera Università di Bolzano
Università Liedia de Bulsan

Syllabus
Course description

Course title	Artificial Intelligence and Financial Decision Making
Course code	25407
Scientific sector	SECS-P/09
Degree	Master in Accounting and Finance
Semester and academic year	2
Year	2
Credits	6
Modular	No

Total lecturing hours	36
Total lab hours	-
Total exercise hours	-
Attendance	Highly recommended, but not required
Prerequisites	-
Course page	-

Specific educational objectives	Artificial Intelligence (AI) and Financial Decision Making is a second-year course for students attending the Master in Accounting and Finance. This course is designed to offer an introduction to Artificial Intelligence applied to banking and finance. Banks, insurance firms, fintech startups and even government regulators use AI for applications as diverse as investment advisory, optimizing lending decisions, fraud detection, real-time transaction monitoring, and so on. The course objective is to gain an understanding of the fundamentals of AI in financial decision-making. The main machine learning models will be studied, with a particular focus on the supervised learning algorithms. The theoretical analysis of the models will be followed by hands-on, emerging applications in a variety of financial decisions. The main software packages in the field of data science and machine learning libraries will be used. The course is designed to acquire knowledge of R (intermediate level) and Python (basic level), with the goal to equip students with fundamental AI skills in high demand, even without a background in computer science or engineering. Students who complete this course will combine a strong conceptual understanding of the technologies behind AI with the ability to apply the most suitable ones in business-oriented decisions within the finance space.

Lecturer	Dr. Carlo Milani
Teaching language	Italian

Office hours	TBD
List of topics covered	The main subject areas covered in the course are: • Data preparation • Data collection • Classification model • Regression model • Ensemble learning (training with multiple machine learning models) • Deep learning • Clustering • Dimensional reduction A detailed schedule is provided at the beginning of the course.
Teaching format	Combination of lectures, labs, and projects.

Learning outcomes	Knowledge and understanding: students will learn the different preparatory phases for the construction of AI and machine learning models and the main characteristics of the algorithms, both from a theoretical point of view and through applications with the main open source software packages. Applying knowledge and understanding: students will acquire the ability to apply their understanding of the concepts, terminologies and emerging issues in AI to solve complex data science problems within a business-oriented context. Making judgments: the course stimulates students to critically evaluate which machine learning algorithm to apply according to the business-oriented problem to be solved. Communication skills: students will engage in practical applications with the objective to train their ability to properly and effectively communicate results obtained by data science projects. Learning skills: the course equip students with skills that enhance their autonomy in managing a data science project, from data preparation and data collection to modeling.

Assessment	Attending Students: Student final grade will be a combination of: written exam, individual coursework, class participation in case study presentations/discussions Not Attending Students

	The assessment of non-attending student will be through a final exam only, which counts as 100% of final grade.
Assessment language	Italian
Evaluation criteria and criteria for awarding marks	Design of a data science project applied to banking or finance.

Required readings	Lantz, Brett (2019). “Machine Learning with R: Expert techniques for predictive modeling”, 3rd Edition. Packt Publishing.
Supplementary readings	Gosmar, Diego (2020). “Machine Learning: Il sesto chakra dell’intelligenza artificiale”. Further readings will be announced by the start of the course.