COURSE DESCRIPTION – ACADEMIC YEAR 2019/2020

Course title	**Decision Making and Support Systems**
Course code	73026
Scientific sector	INF/01
Degree	Master in Computational Data Science (LM-18)
Semester	1
Year	2
Credits	6
Modular	No

Total lecturing hours	40
Total lab hours	20
Attendance	Attendance is not compulsory. Non-attending students have to contact the lecturer at the start of the course to agree on the modalities of the independent study. The exam modalities for non-attending students are indicated below, in the fields "Assessment" and "Evaluation criteria and criteria for awarding marks".
Prerequisites	
Course page	https://ole.unibz.it/

Specific educational objectives	The course belongs to the type "caratterizzanti – discipline informatiche" in the curricula "Data Analytics" and "Data Management". The course gives a general overview of topics in decision theory. After this course, the students will have acquired general and pluri-disciplinary knowledge about decision. The students will be more prepared when facing situations of decision-making. They will also have a grasp on the technical aspects of decision-making, and will be capable to apply them to provide decision support.

Lecturer	Nicolas Troquard
Contact	POS 3.02, nicolas.troquard@unibz.it
Scientific sector of lecturer	ING-INF/05
Teaching language	English
Office hours	Arrange beforehand by email.
Lecturing Assistant (if any)	--
Contact LA	--
Office hours LA	--
List of topics	• Modelling decisions • Modelling uncertainty • Modelling preferences • Modelling negotiations • Decision support tools • Psychology of decision making • Persuasion

Teaching format	Frontal lectures, practice and exercise classes.

Learning outcomes	Knowledge and understanding: • D1.5 - Knowledge of principles and models for the representation, management and processing of complex and heterogeneous data Applying knowledge and understanding: • D2.2 - Ability to address and solve a problem using scientific methods • D2.11 - Ability to develop intelligent software systems for decision support Making judgments • D3.2 - Ability to autonomously select the documentation (in the form of books, web, magazines, etc.) needed to keep up to date in a given sector • D3.3 - Ability to identify reasonable work goals and estimate the resources needed to achieve these goals Communication skills • D4.1 - Ability to use English at an advanced level with particular reference to disciplinary terminology Learning skills • D5.2 - Ability to autonomously keep oneself up to date with the developments of the most important areas of data science

Assessment	• Written exam with verification questions. • Exercise, lab work, or project possibly done in groups of at most 3, and requiring individual reports and/or presentations. The assessment modalities for non-attending students is identical.
Assessment language	English
Assessment Typology	Monocratic
Evaluation criteria and criteria for awarding marks	• Assessment 1: 40% of the final grade will be awarded for the project, exercise, and lab work. • Assessment 2: 60% of the final grade will be awarded for the final exam. Admission is awarded when the final grade is 60% or above. • Relevant for assessment 1: ability to summarize, evaluate, and establish relationships between topics; ability to work in a team; creativity; skills in critical thinking; correctness and clarity of answers. • Relevant for assessment 2: correctness and clarity of answers. The assessment modalities for non-attending students is identical.

Required readings	There is no single textbook that covers the entire course. The course material is collected from various textbooks and research papers.

Supplementary readings	• Stuart Russell, Peter Norvig - Artificial Intelligence: A Modern Approach • Yoav Shoham, Kevin Leyton-Brown - Multiagent Systems: Algorithmic, Game-Theoretic, and Logical Foundations • Efraim Turban, Jay E. Aronson - Decision Support Systems and Intelligent Systems • Shaheen Fatima, Sarit Kraus, Michael Wooldridge - Principles of Automated Negotiation • Rafael H. Bordini, Jomi F. Hubner, Michael Wooldridge. Programming Multi-Agent Systems in AgentSpeak Using Jason. • Michael D. Resnik - Choices: An Introduction to Decision Theory • Daniel Kahneman - Thinking, Fast and Slow
Software used	Various tools and programming languages may be used during the course.