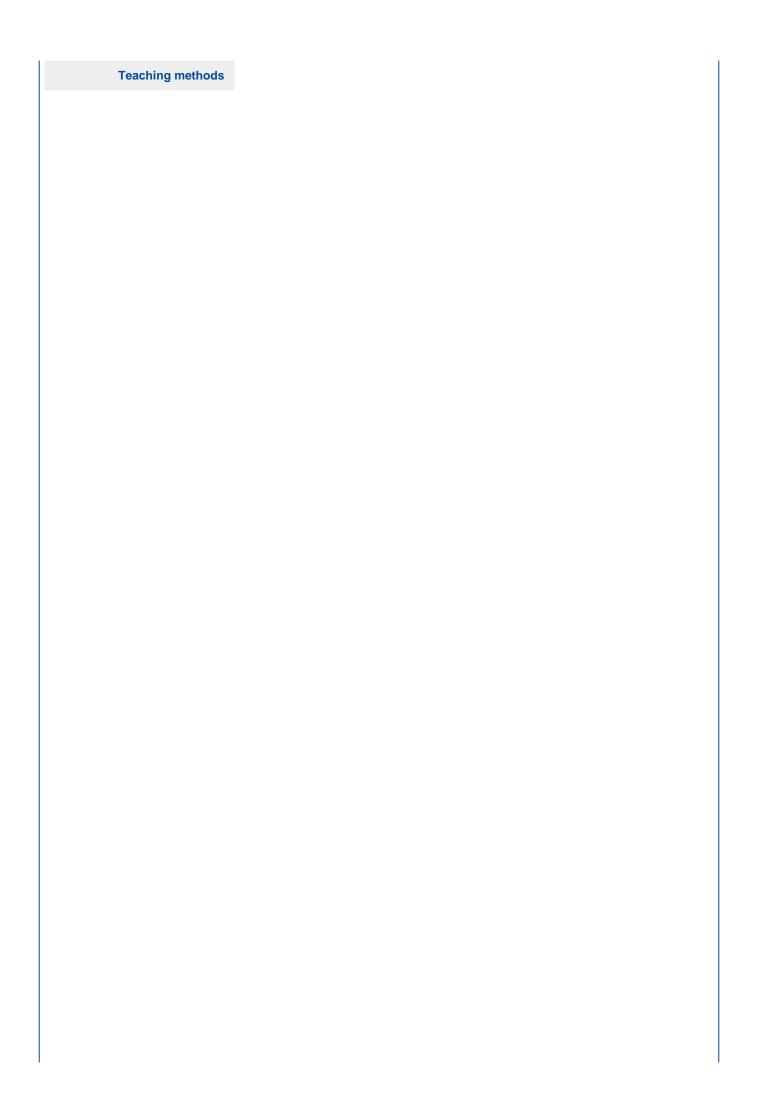
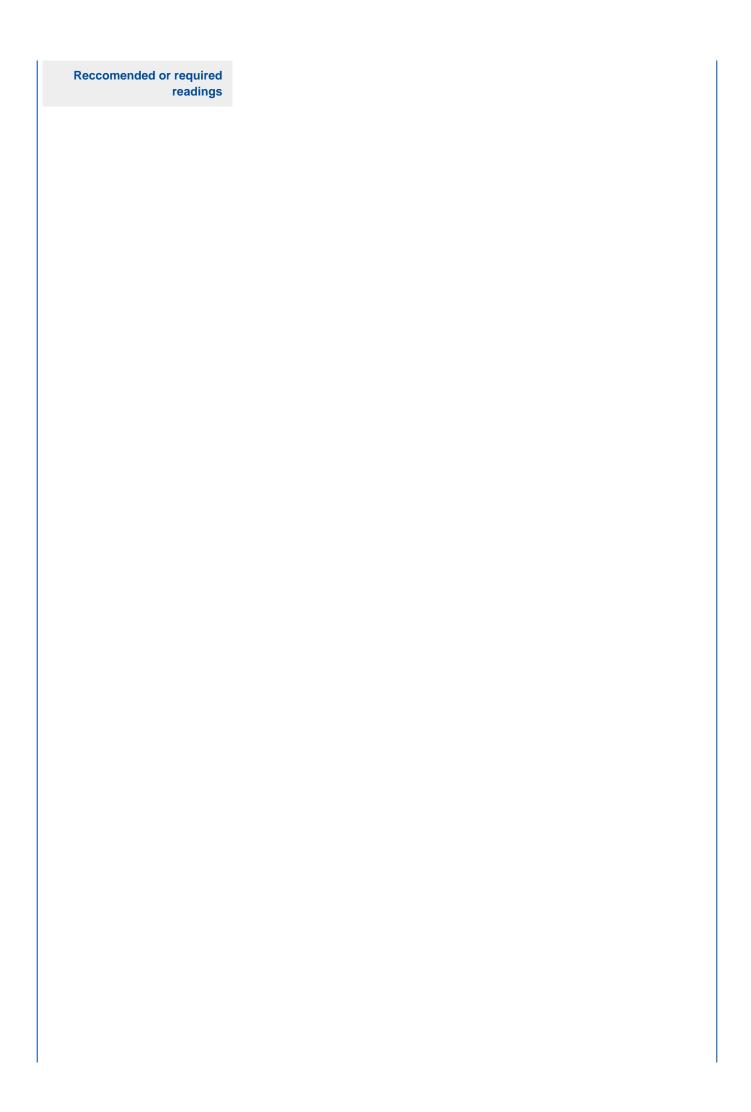


Anno Accademico 2023/2024		
LABORATORY OF MACHINE LEARNING APPLIED TO PHYSICAL SYSTEMS		
Enrollment year	2021/2022	
Academic year	2023/2024	
Regulations	DM270	
Academic discipline	NN (INDEFINITO/INTERDISCIPLINARE)	
Department	DEPARTMENT OF MATHEMATICS "FELICE CASORATI"	
Course	ARTIFICIAL INTELLIGENCE	
Curriculum	PERCORSO COMUNE	
Year of study	3°	
Period	2nd semester (04/03/2024 - 18/06/2024)	
ECTS	3	
Lesson hours	36 lesson hours	
Language	English	
Activity type	ORAL TEST	
Teacher	GEROSA DAVIDE (titolare) - 3 ECTS	
Prerequisites	Introduction to physics as provided in the relevant first- and second-year classes. Basic knowledge of the Python programming language.	
Learning outcomes	<ul> <li>Describe physical systems using the appropriate mathematical formulation.</li> <li>Apply machine-learning algorithms to the resulting problem.</li> <li>Understand the advantages and limitations of machine learning algorithms given the specific problem at hand.</li> </ul>	
Course contents	<ul> <li>Intro: Computing and machine-learning in physics and astronomy.</li> <li>Intro: The typical tasks of a computational physicist.</li> <li>Example: A prototypical physical system.</li> <li>Task: The "classical" computational solution.</li> <li>Task: The machine-learning solution.</li> </ul>	

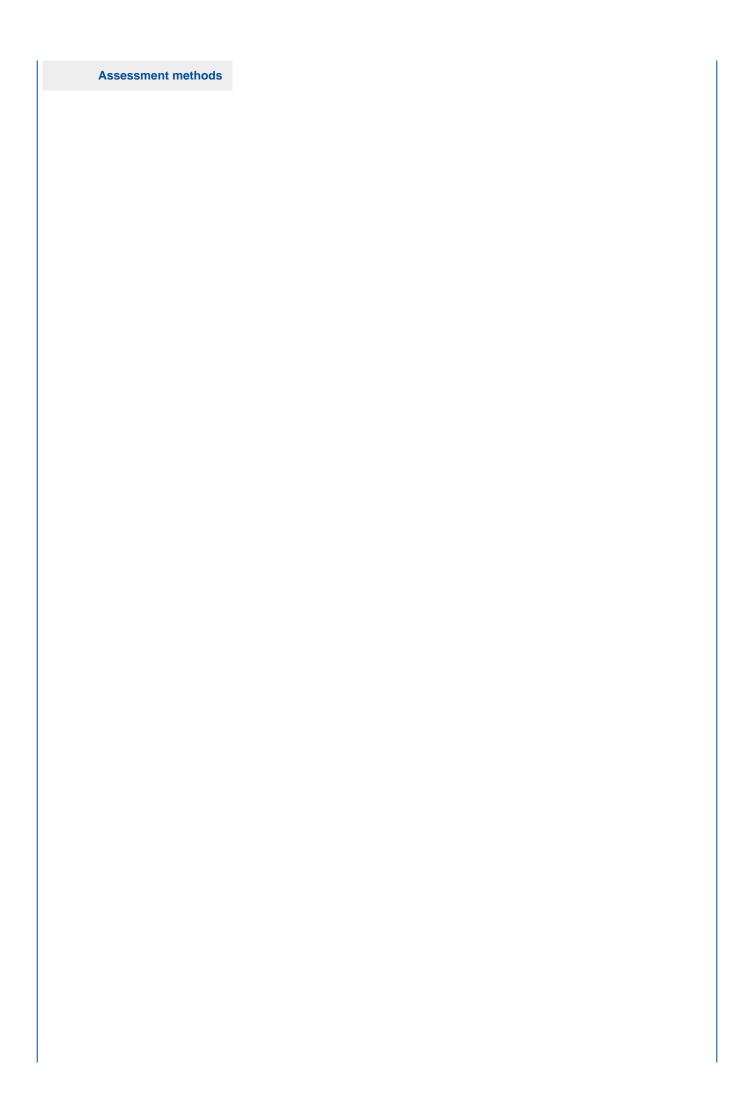
- Project development and reporting.



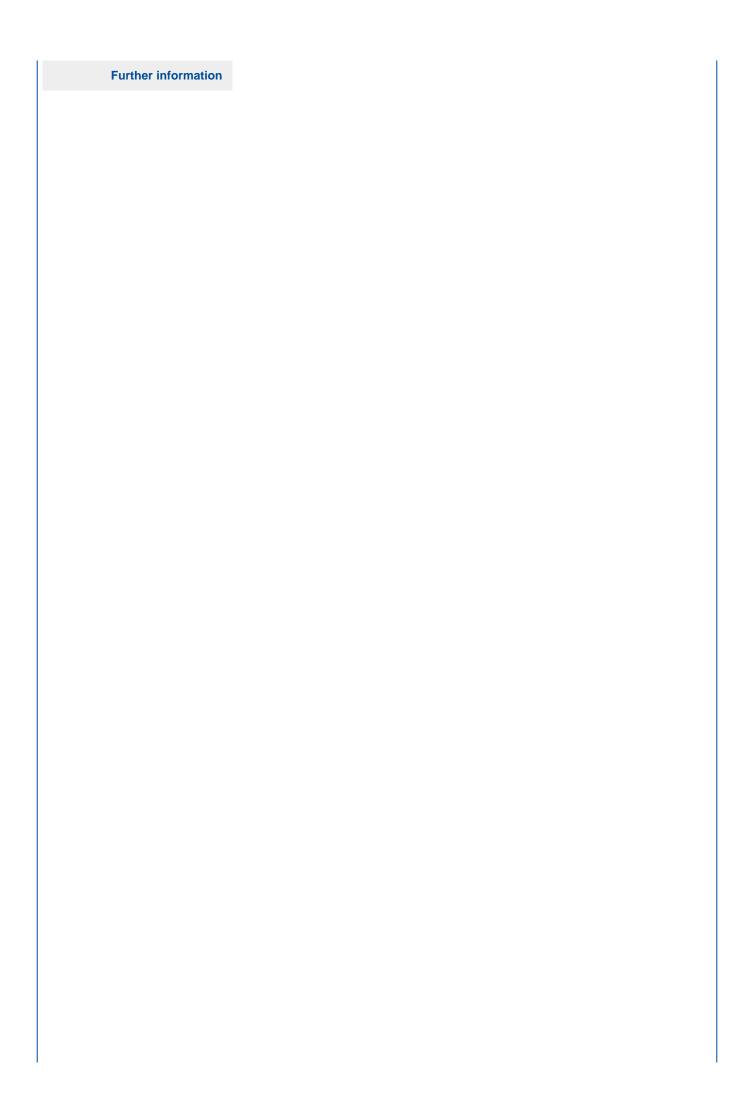
Each class will pair traditional lectures (to introduce the relevant problems) with hands-on exercises and demonstrations (to tackle the relevant problem). These computational activities are the key content of the course.



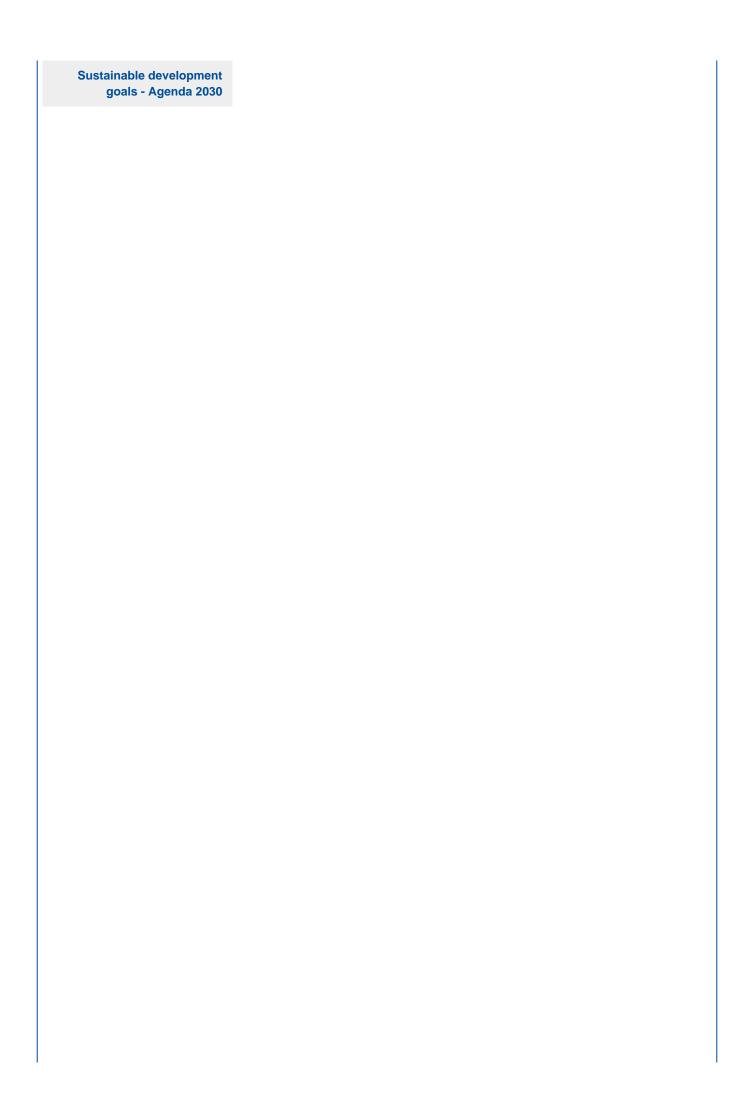
- Statistics, Data Mining, and Machine Learning in Astronomy: A Practical Python Guide for the Analysis of Survey Data. Željko Ivezi?, Andrew J. Connolly, Jacob T. VanderPlas, and Alexander Gray. Princeton University Press
- Machine Learning for Physics and Astronomy. Viviana Acquaviva. Princeton University Press.



Students will develop a computational project. This will be started during the lectures and completed asynchronously. The project report and associate code, likely in the form of a Jupyter notebook, will then be submitted for evaluation.



Lectures will take place at Milano-Bicocca.



Istruzione di qualità. Uguaglianza di genere. Industria, innovazione e infr \$Ibl legenda sviluppo sost	rastrutture. tenibile