**Explanation**

The Python script will aim at forecasting the final grades of students (G3) based on the UCI Student Performance data based on a supervised learning method. The start of it is loading and preprocessing the data, encoding categorical values, scaling features, and dividing the dataset into training and testing subsets. One of the Decision Trees Regressor is trained on the data in order to learn the pattern that depends on academic performances. It is followed by forecasting on test data. Lastly, the code assesses the accuracy through such measures as MAE, and R squared, and visualizes the observed versus predicted grade. This facilitates the detection of students at risk thereby assisting in early intervention as a way of enhancing quality education (SDG 4).

**SDG problem addressed.**

The issue being researched is low access to quality education and the low performance of students, in particular, those belonging to vulnerable groups. Several students encounter difficulties as a result of socioeconomic status, absence of support network or lack of participation in schoolwork which causes poor grades or dropout threats. These students can be identified early using predictive tools. The use of data to enhance quality education in terms of outcome, inform the interventions and facilitate inclusive learning environment supports the Sustainable Development Goal 4 as a part of the project. Personalized learning and resources allocation based on academic performance prediction will not allow any student to be left behind.

**ML approach used (e.g., "K-means clustering for urban waste analysis").**  
To predict the academic performance of students, a supervised learning model was applied which was the Decision Tree Regressor. The data used was the UCI repository containing the demographics of the student, attendance, parental education, and study habits. The encoding, normalisation and division of the features between training and testing sets was done. The model performed pattern learning that correlates to final grades (G3) and supplied predictions on previously unused information. This strategy enables early intervention and planning of education depending on the data. It enables schools to identify factors of risk and assist accordingly. Decision Trees were selected in view of the easy understanding and applicability to minor educational data.

**Results and ethical considerations.**  
Overall the model showed fairly good accuracy with low mean absolute error and the high alignment between the predicted and the actual grades of the students. It was useful in finding out students who are academically at risk. Nevertheless, there are ethical issues. The unfair predictions could be because of bias in data (e.g. overrepresentation of specific genders or backgrounds). Transparent models and balanced data are essential to encourage fairness. When dealing with confidential education information, student privacy should be guarded as well. Finally, educational equity and sustainability is the solution this will ultimately lead to, although, the solution should be implemented in a responsible manner that is able to help all learners but does not contribute to the already existing disparities.