MATH 11205: Machine Learning in Python 2024-2025 Project Marking

Specific rubrics will be used to assess each of the four required sections (1. Introduction, 2. Exploratory Data Analysis and Feature Engineering, 3. Model Fitting and Tuning, 4. Discussion and Conclusion) of the project, along with additional rubrics assessing the quality of the overall writing, coding, and visualization.

The **total 30 points** for the project will be broken down as follows, with the description providing what is necessary for full marks.

- **Introduction: 3 points.** An exceptional job at introducing the data and objectives and outlining the methods used. Can be passed to the client with no editing required.

- **Exploratory Data Analysis and Feature Engineering: 6 points.** Meaningful insights into the data are carefully selected and presented in depth during the exploratory data analysis. Necessary preprocessing steps are carried out and described to a high standard. Feature engineering steps are well motivated and fully described. Code is correct, interpretations are sound, figures and summaries are appropriate for the data types, and can be passed to the client with no editing required.

- **Model Fitting and Interpretations: 6 points.** An effective model is selected that is suitable for the problem at hand, and a compelling case for that model is made. The model is properly fit and tuned. The interpretation and discussion of the model fit results is exemplary and provides useful insight. A sound comparison with a baseline model is provided. Code is correct, interpretations are sound, and can be passed to the client with no editing required.

- **Discussion and Conclusion: 6 points.** The discussion of the findings of the project and the results is exemplary and clear recommendations are presented for the client. The discussion and results are not overstated, and possible limitations of the model and data are included. Important questions for future research in the field are identified. Interpretations are sound, and can be passed to the client with no editing required.

- **Overall Writing: 3 points.** The writing is rigorous, yet flows naturally; there are no lapses in phrasing, grammar, or spelling, resulting in a report that is enjoyable to read throughout.

- **Overall Coding: 3 points.** Code is well-structured and easy to follow and it solves the problem as intended. Code has appropriate comments and documentation and it uses best practices and industry standards.

- **Overall Visualizations: 3 points.** Clear, well-organized figures/tables with appropriate labels and integration with project and proper referencing/citation. The report evidences exceptional attention to detail in the presentation of figures and tables.