**l Project (40% of the total grade):**

The culminating event of this course is a team-based final project which will require teams to integrate and utilize at least three Google Cloud Platform (GCP) technologies (e.g., BigQuery, Dataflow, and Cloud pub/sub), in addition to Looker Studio. This project must incorporate aspects of prompt engineering, testing the team's ability to optimize AI models using tailored input prompts.

Requirements for the final project:

1. Problem Domain: Select a relevant and engaging problem domain of your choice.
2. Data Sources: Utilize one archived and one real-time streaming data source via an open API.
3. Analysis Goals: Clearly state and describe your goals for analysis.
4. Metric Selection and Justification: Define the metrics that you are measuring. Provide a clear justification for these selections.
5. Metric Discussion: Critically evaluate your selected metrics for their relevance and usefulness in the context of your project.
6. Recommendations: Provide well-reasoned recommendations that align with your findings from your data analysis.
7. Prompt Engineering: Demonstrate your usage and mastery of prompt engineering. Document the process of designing, testing, and refining the prompts used in your AI models. Discuss the performance improvement observed through prompt optimization.
8. Client-focused Analysis: Ensure your analysis is client-centered, offering valuable and actionable insights.

This project not only evaluates your grasp of the course material but also challenges your ability to innovate and adapt to the needs of a dynamic problem domain. Your final project should demonstrate a comprehensive understanding of cloud-based big data analytics and the practical application of AI-assisted tools.

**Project Deliverables:**

Teams must submit the following:

1. **Project Summary (GitHub Readme):** An elevator pitch for your topic (problem, evidence, recommendation) as the first section in a GitHub Readme file in your project repository.
2. **Interactive Data Studio Dashboard, Story, and Package:** Develop a brief report that critically evaluates the problem using the analytical approaches discussed in class. Take advantage of the interactive nature of Data Studio to make your presentation more engaging.
3. **Recommendation Document (Google Doc):** Outline your proposed solutions in a well-structured Google Doc. Use visual aids and infographics to enhance readability and make your arguments more persuasive.
4. **Repository (GitHub):** Provide a GitHub repository containing all code (including SQL queries and scripts for creating dataflows, pipelines, pub/subs), configuration files, and datasets used in the project.
5. **Walkthrough Video (YouTube):** Create a video walkthrough of your code, results, and analysis. This video should explain your process and findings and could be a screen recording with a voice-over. Make it approximately 5-10 minutes long and share the link to the video on YouTube.
6. **Prompt Engineering Document (Google Doc):** Document all steps taken in designing the prompts used in the project. Discuss why certain prompts were chosen and how they improved the performance of your AI model.
7. **Project Reflection (Medium Post):** Write a reflective post on Medium discussing your learning journey, the challenges you faced, your key takeaways, and how the project can be applied in real-world scenarios.

*Remember to include the links to your GitHub repository, YouTube video, Google Doc, and Medium post in your submission.*