**Regression Analysis Course**

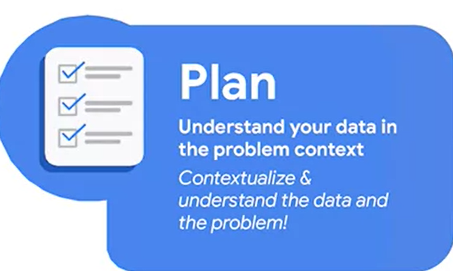
* **Course Focus**: The course will explore how data professionals use regression analysis to derive actionable insights from data.
* The course will introduce essential terms like machine learning models, regression analysis, and their statistical foundations.
* Regression models help tell a story about the relationships between variables, guiding stakeholders in making informed business decisions.
* **Pace Framework**: The course is structured around the PACE framework, which stands for Plan, Analyze, Construct, and Execute. This framework will guide the learning process.
* **Simple Linear Regression**:
  + The first regression model covered in detail.
  + The course will walk through the entire process using different scenarios and data.
* **Multiple Linear Regression**:
  + Builds on the concepts from simple linear regression.
  + Allows for solving more complex problems.
  + Topics include variable selection, model interpretation, and hypothesis testing (e.g., Chi-squared test, ANOVA).
* **Logistic Regression**:
  + The final and most complex model covered in the course.
  + Prepares learners for more advanced topics in machine learning.

 **Iterative Modelling Process**:

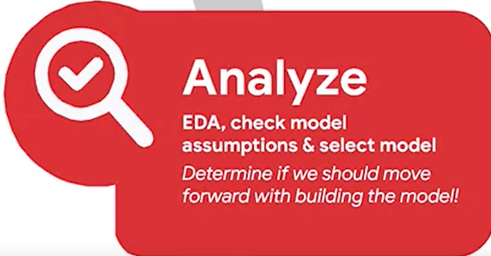
* Modelling is iterative, following frameworks like the data life cycle or exploratory data analysis (EDA).
* The course uses the PACE framework—Plan, Analyze, Construct, Execute—to structure the regression analysis process.

 **PACE Framework in Regression Analysis**:

* **Plan**:
  + Focuses on understanding data within the problem context.
  + Considers data access, collection methods, and business needs.



* **Analyze**:
  + Involves closely examining data to select appropriate models.
  + Utilizes Python for EDA and checking model assumptions.
  + Understanding statistics is crucial for validating model assumptions.



* **Construct**:
  + The phase where the model is built using Python or other coding languages.
  + Involves selecting variables, transforming data, writing code, and rechecking model assumptions.
  + The last step in this phase is evaluating model results using metrics and comparing models.



* **Execute**:
  + Involves interpreting and sharing results through formal reports and visualizations.
  + Focuses on converting model statistics into meaningful descriptions of variable relationships, considering the context and initial questions from the plan phase.



 **Role of Data and Storytelling**:

* Data is at the core of the PACE framework, ensuring insights are data-driven and contextually relevant.

 **Correlation and Regression**:

* We will explore the relationship between correlation and regression.
* Foundational regression models like linear and logistic regression will be covered in depth, providing a solid understanding for further exploration.

 **Tools and Techniques**:

* Emphasis on the importance of statistical tools and "statistical grammar" for understanding and applying regression analysis.

 **Practical Application**:

* The course will use examples to demonstrate how to navigate through the PACE stages.
* Learners will gain experience in knowing when to pivot between stages and how to refine their models based on iterative learning.