# Instructor Guide for Microprojects

This guide provides an overview of the 20 microprojects included in the **DAN\_Assessment\_Session** package. Each project is aligned with one or more course outcomes (COs) and integrates practical skills from the syllabus. Instructors should use this guide to monitor progress, evaluate student work, and provide feedback.

## Evaluation Rubric

The recommended evaluation for microprojects combines **process** and **product** assessment:

* **Process (60%)**: Proper problem definition, planning, and execution (cleaning, analysis, coding).
* **Product (40%)**: Quality of final deliverable (correctness of results, clarity of charts, completeness of report).

## Project Summaries

### Microproject 4: Data Cleaning Exercise

* **Objective:** Clean a dataset of customer feedback by identifying and fixing missing and duplicate entries.
* **Dataset:** customer\_feedback\_dirty.csv – The dataset contains customer feedback records with missing comments, duplicate entries, and inconsistent capitalization.
* **Evaluation Tips:** Check whether students follow the outlined steps, provide accurate analysis, and present results clearly. Encourage creativity in visualization and interpretation.

### Microproject 5: Excel Pivot Analysis (Supermarket Sales)

* **Objective:** Analyze supermarket sales using pivot tables and pivot charts.
* **Dataset:** supermarket\_sales.csv – The dataset includes sales transactions with fields like Date, Store, Category, and Sales Amount.
* **Evaluation Tips:** Check whether students follow the outlined steps, provide accurate analysis, and present results clearly. Encourage creativity in visualization and interpretation.

### Microproject 6: Trend Forecasting with Excel

* **Objective:** Use Excel to perform trend forecasting on historical sales data.
* **Dataset:** sales\_trend.csv – The dataset contains yearly sales figures for five years.
* **Evaluation Tips:** Check whether students follow the outlined steps, provide accurate analysis, and present results clearly. Encourage creativity in visualization and interpretation.

### Microproject 7: Interactive Excel Dashboard (HR Analytics)

* **Objective:** Create an HR dashboard to visualize employee data across departments.
* **Dataset:** hr\_data.csv – The dataset contains employee records with fields like Department, Salary, Attrition Status, and Location.
* **Evaluation Tips:** Check whether students follow the outlined steps, provide accurate analysis, and present results clearly. Encourage creativity in visualization and interpretation.

### Microproject 8: Data Visualization Story (Excel)

* **Objective:** Tell a data story using multiple chart types in Excel.
* **Dataset:** country\_population.csv – The dataset lists the population of several countries over different years.
* **Evaluation Tips:** Check whether students follow the outlined steps, provide accurate analysis, and present results clearly. Encourage creativity in visualization and interpretation.

### Microproject 9: Python Matplotlib Exploration

* **Objective:** Develop proficiency in Matplotlib by creating multiple chart types from a small dataset.
* **Dataset:** python\_sample.csv – The dataset contains a simple sequence of numbers and categories for demonstration purposes.
* **Evaluation Tips:** Check whether students follow the outlined steps, provide accurate analysis, and present results clearly. Encourage creativity in visualization and interpretation.

### Microproject 10: Matplotlib Advanced Plot

* **Objective:** Practice advanced plotting in Matplotlib by combining two datasets on the same figure.
* **Dataset:** sales\_profit.csv – The dataset contains monthly sales and profit figures for one year.
* **Evaluation Tips:** Check whether students follow the outlined steps, provide accurate analysis, and present results clearly. Encourage creativity in visualization and interpretation.

### Microproject 11: Data Analysis Report (Mini-Project)

* **Objective:** Conduct a comprehensive data analysis project using a real-world dataset.
* **Dataset:** weather\_data.csv – The dataset includes daily temperature, humidity, and rainfall for a city over several months.
* **Evaluation Tips:** Check whether students follow the outlined steps, provide accurate analysis, and present results clearly. Encourage creativity in visualization and interpretation.

### Microproject 12: Excel vs Python Analysis

* **Objective:** Compare the analysis process of the same dataset in Excel and Python.
* **Dataset:** sales\_category.csv – The dataset lists product categories with sales amounts.
* **Evaluation Tips:** Check whether students follow the outlined steps, provide accurate analysis, and present results clearly. Encourage creativity in visualization and interpretation.

### Microproject 13: Probability Distribution Simulation

* **Objective:** Simulate a probability distribution and visualize the results.
* **Dataset:** dice\_rolls.csv – The dataset will store simulated outcomes of rolling a die 1000 times.
* **Evaluation Tips:** Check whether students follow the outlined steps, provide accurate analysis, and present results clearly. Encourage creativity in visualization and interpretation.

### Microproject 14: ANOVA Case Study

* **Objective:** Perform an ANOVA test to compare means of three groups.
* **Dataset:** anova\_scores.csv – The dataset includes three separate sets of student test scores from different teaching methods.
* **Evaluation Tips:** Check whether students follow the outlined steps, provide accurate analysis, and present results clearly. Encourage creativity in visualization and interpretation.

### Microproject 15: Data Visualization with Different Charts

* **Objective:** Create equivalent charts in Excel and Python and compare them.
* **Dataset:** population\_continent.csv – The dataset contains population figures for different continents.
* **Evaluation Tips:** Check whether students follow the outlined steps, provide accurate analysis, and present results clearly. Encourage creativity in visualization and interpretation.

### Microproject 16: Interactive Data Exploration (Automobile Dataset)

* **Objective:** Explore an automobile dataset using pivot tables and slicers to find insights.
* **Dataset:** car\_specs.csv – The dataset lists car specifications including Make, Fuel Type, Horsepower, Mileage, and Number of Cylinders.
* **Evaluation Tips:** Check whether students follow the outlined steps, provide accurate analysis, and present results clearly. Encourage creativity in visualization and interpretation.

### Microproject 17: Chart Formatting Makeover

* **Objective:** Improve a poorly formatted chart and describe the changes made.
* **Dataset:** bad\_chart\_data.csv – The dataset contains monthly expenses for different categories.
* **Evaluation Tips:** Check whether students follow the outlined steps, provide accurate analysis, and present results clearly. Encourage creativity in visualization and interpretation.

### Microproject 18: Matplotlib Customization Challenge

* **Objective:** Apply multiple customizations to a Matplotlib plot.
* **Dataset:** trig\_data.csv – The dataset contains values for angle (in degrees) and corresponding sine values.
* **Evaluation Tips:** Check whether students follow the outlined steps, provide accurate analysis, and present results clearly. Encourage creativity in visualization and interpretation.

### Microproject 19: Domain Analytics Microproject (Healthcare)

* **Objective:** Analyze patient data to discover insights relevant to healthcare management.
* **Dataset:** patient\_data.csv – The dataset includes patient age, blood pressure, cholesterol level, and outcome (e.g., recovery, ongoing treatment).
* **Evaluation Tips:** Check whether students follow the outlined steps, provide accurate analysis, and present results clearly. Encourage creativity in visualization and interpretation.

### Microproject 20: Collaborative Microproject (City Transport Data Story)

* **Objective:** Work in a team to analyze city transport data and present a cohesive story.
* **Dataset:** city\_transport.csv – The dataset includes data on bus routes, average ridership, delays, and operational cost.
* **Evaluation Tips:** Check whether students follow the outlined steps, provide accurate analysis, and present results clearly. Encourage creativity in visualization and interpretation.