

SEMI-FINAL PERFORMANCE TASK / LABORATORY ACTIVITY

Subject: Data Analytics

Topic Coverage: Data Mining, Machine Learning Concepts, and Business Analytics Application
Duration: 1–2 Weeks

Course Outcome Alignment:

- CO3: Apply basic data mining techniques to identify patterns and trends.
- CO4: Utilize machine learning concepts for simple predictive analytics.
- CO5: Interpret data-driven results to support business decisions.

Activity Title: Applying Predictive Data Analytics for Decision Making

Objective:

At the end of this activity, students should be able to:

1. Use Excel or Google Sheets to perform simple predictive analysis using trendlines or regression.
2. Identify meaningful patterns or relationships from a dataset using data mining techniques.
3. Present a summary of findings and propose data-driven recommendations.

Materials Needed:

- Microsoft Excel / Google Sheets
- Provided dataset (or instructor-approved open dataset)
- Internet access
- Reference materials (class notes or lecture slides)

Instructions:

Part 1: Data Preparation and Mining (25 pts)

Choose or use a dataset (e.g., sales records, student performance, product reviews, or business transactions). Clean and organize your data. Apply data mining techniques such as sorting, filtering, grouping, and pattern identification. Summarize findings in a short narrative.

Part 2: Predictive Analytics (30 pts)

Use Excel's Regression Analysis Tool or Trendline to predict outcomes. Present your regression equation and R^2 value. Interpret the results (e.g., an R^2 value of 0.86 indicates a strong linear relationship).

Part 3: Data Visualization and Dashboard (25 pts)

Create a mini-dashboard in Excel including summary statistics, at least two charts, and key metrics using conditional formatting. Optional: add interactivity with slicers or filters.

Part 4: Report and Presentation (20 pts)

Write a 1-page summary report including objectives, key findings, predictions, and business recommendations. Save and submit as PDF with your Excel file.

Submission Format: Excel file (data, analysis, dashboard) and PDF report (summary & recommendations).

Grading Rubric:

Criteria	Description	Points
Data Preparation & Mining	Accuracy, organization, and insight from data mining	25
Predictive Analytics	Correct regression/trend analysis and interpretation	30

Data Visualization & Dashboard	Clarity, design, and informativeness of charts	25
Report & Presentation	Clarity of findings and business relevance	20
Total		100

Optional Extension (Bonus 10 pts): Perform What-If Analysis in Excel using Scenario Manager or Goal Seek to test different data-driven decisions.