COURSE SYLLABUS

Data Analysis Intermediate Course (Self-Paced)

This course builds intermediate data analysis skills used to explore, clean, and interpret organizational data for decision making. Participants learn how to identify data quality issues, apply analytical tools in Excel, interpret statistical patterns, and evaluate data sources to support reliable insights.

Group classes (Live Online) and onsite training are available for this course. For more information, email onsite@graduateschool.edu or visit: https://www.graduateschool.edu/courses/data-analysis-intermediate-course-self-paced



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Course Outline

Module 1: Foundations of Data Analysis and Data Context

- Differentiate between raw data and meaningful information by examining how context and attribute labeling transform data into actionable insights.
- Identify common sources of organizational data including transactional systems, enterprise systems, and external data sources.
- Explain how transactional systems differ from analytical systems such as data warehouses and data marts.
- Recognize how data is combined, transformed, and integrated across systems to support analysis and decision making.

Module 2: Data Discovery and Data Quality Assessment

- Conduct initial data discovery to understand the structure, context, and potential analytical value of a dataset.
- Identify common data quality issues including duplicates, missing values, formatting inconsistencies, and data integrity errors.
- Apply techniques to detect data anomalies using sorting, filtering, and conditional formatting.
- Prepare datasets for analysis by applying data cleaning and standardization methods.

Module 3: Data Preparation and Data Transformation Techniques

- Use Excel tools to prepare datasets for analysis, including text-to-columns, formatting corrections, and standardization functions.
- Apply functions such as TRIM, CLEAN, CONCAT, and IFERROR to correct and standardize datasets.
- Understand how joining data from multiple systems can introduce data quality risks.
- Evaluate strategies for improving data integrity before performing analysis.

Module 4: Analytical Tools and Data Visualization

- Create pivot tables and pivot charts to summarize and visualize large datasets.
- Use analytical features within Excel to explore patterns, trends, and outliers.
- Apply visualization techniques to communicate insights derived from data.
- Understand how visual representation improves comprehension of analytical results.

Module 5: Descriptive Statistics and Analytical Techniques

- Apply descriptive statistical methods including mean, median, mode, and measures of dispersion.
- Interpret standard deviation, variance, and coefficient of variation to evaluate data distribution.
- Assess skewness and kurtosis when examining data patterns and anomalies.
- Use the Excel Data Analysis ToolPak to perform statistical analysis and generate analytical outputs.

Module 6: Applied Data Analysis and Case Studies

- Perform analytical exercises including duplicate transaction analysis, vendor analysis, and anomaly detection.
- Apply sampling methods to create representative subsets of data for deeper analysis.
- Use analytical techniques to identify potential fraud, policy violations, or operational risks.
- Interpret analytical results to support decision making and organizational insight.

Module 7: Data Governance, Compliance, and Responsible AI Use

- Recognize regulatory and governance frameworks that influence data analysis practices.
- Understand the importance of data reliability, audit standards, and data integrity requirements.
- Apply best practices when using artificial intelligence tools in data analysis.
- Identify privacy, ethical, and legal considerations when working with sensitive or regulated data.