



AIDD Data Analysis & Visualization Essentials

The following Data Analysis & Visualization Essentials are designed around specific topics participants need to become more efficient with data analysis.

These topics have been **streamlined** into 4-Hour segments that are focused on specific data analysis concepts or tool functionality. This allows for minimal time away from work and for participants to focus their effort on specific topics that meet their needs.

These courses are taught using our **Analytics for Information Driven Decisions** (AIDD) methodology. This is an iterative approach that allows the participant to make use of information and insights they learn along the way to boost their efficiency and effectiveness. Real-world examples are used to help participants connect what they are learning to their jobs immediately.

These courses are primarily taught using MS Excel. Participants should have general experience using Excel and be able to navigate the Excel application. Power BI and Tableau can be included if requested.

Essential Topics:

1. Introduction to Data Analysis
 - a. Introduction to Data Analysis (4 Hours)
2. Essential Data Visualization:
 - a. Beginner: Data Visualization Concepts (4 Hours)
 - b. Intermediate Visual Analysis Techniques (4 Hours)
3. Efficient Data Analysis with Microsoft Excel
 - a. Beginner Data Analysis Excel Topics (4 Hours)
 - b. Intermediate Data Analysis Excel Topics (4 Hours)
4. Data Analysis: Power Pivot, Power Query, Power BI
 - a. Introduction to Modelling Data with Power Pivot (4 Hours)
 - b. Introduction to Power Query (4 Hours)
 - c. Introduction to Microsoft's Power BI (4 Hours)
5. Statistical Analysis of Data
 - a. Statistical Analysis of Data (4 Hours)



Introduction to Data Analysis

This course provides an overview of Data Analysis. This course is intended for those who need an introduction to data analysis concepts and terminology.

This course introduces the “Analytics for Information Driven Decisions” Data Analysis methodology giving a full overview of the data analytic process from data to solution.

Participants will learn several fundamentals about working with, transforming and analyzing data and how to communicate insights to their audience.

Upon completion of the course, participants will be able to:

1. Explain the Data Analysis methodology
2. Define each analytic level: Descriptive, Diagnostic, Predictive and Prescriptive
3. Describe how to build useful information from data
4. Explain the importance of Data Visualization
5. Describe many standard types of charts & graphs and when each should be used
6. Describe the important use of context when evaluating data analysis work



Essential Data Visualization

A joint study by 3M and the University of Minnesota found:

The human brain processes images around 60,000 times faster than text.

These courses will make participants more efficient when analyzing data by using visual analysis techniques. By analyzing the data visually, not only will they uncover the insights more quickly and efficiently, but they will identify the key visuals to show their audience when communicating insights.

Visuals are the best way to make abstract data more concrete and easier to understand. Visuals can also provide valuable context reinforcing the value of the data. For instance, when plotting your destination address into GPS, a map of the route is shown allowing you to visualize the route, the roads you will take, potential traffic slowdowns, alternate routes, etc.

Beginner: Data Visualization Concepts (4-Hours)

This course focuses on providing the participants with a comprehensive understanding of the most important Data Visualization concepts.

Upon completion of the course, participants will be able to:

1. Explain the importance of Data Visualization
2. Describe many standard chart and graph types and when each should be used
3. Display information using meaningful visuals
4. Create Geospatial Visualizations
5. Using Conditional Visualizations
6. Present information in a Dashboard

Participants should have completed or be comfortable with the **Introduction to Data Analysis** course objectives.

Intermediate Visual Analysis Techniques (4 Hours)

This course demonstrates the value of using Data Visualization as an analysis technique and teaches the participants several different ways to use data visualization to analyze data communicate those insights to their audience.

Upon completion of the course, participants will be able to:

1. Gain insights from their data more quickly by using visual analysis techniques
2. Describe the importance of building and maintaining context with visuals
3. Describe how to create actionable visuals decision makers will be able to rely on with confidence
4. Explain how people process and perceive images
5. Make abstract data visible and easier to comprehend
6. Perform a geospatial analysis of location data

Participants should have completed or be comfortable with the **Beginner: Data Visualization Concepts** course objectives.

Note: The Beginner Data Visualization Concepts and Intermediate Visual Analysis Techniques can be taught as a single 8-Hour course.



Efficient Data Analysis with Microsoft Excel

In today's business world, just about every employee works with data to some extent and typically has MS Excel on their desktop. Microsoft Excel is a widely used application which is easy to use and very powerful at deriving information from data that can be used in decision making.

These courses expand the participant's knowledge of data analytic concepts and the functionality of excel so they can become more proficient in their data analysis tasks.

Beginner Data Analysis Excel Topics (4-Hours)

People often have problems trying to use Excel's more advanced features. These problems are most often due to improper spreadsheet design, missing or incorrectly formatted data or other fundamental issues. This course focuses on the proper data analysis fundamentals that will allow Excel's more powerful tools to be used more effectively.

Upon completion of the course, participants will be able to:

1. Describe Proper Data Layouts and Basic Spreadsheet Design
2. Describe the advantages and differences between worksheets and tables
3. Describe the difference between Data & Reports
4. Filter & Sort Data and understanding data records, columns and ranges
5. Create basic Formulas and use basic Functions

Participants should have completed or be comfortable with the **Introduction to Data Analysis** course objectives.

Intermediate Data Analysis Excel Topics (4-Hours)

Using Excel's more advanced features boosts employees efficiency exponentially. Pivot tables and other features allow users to quickly reorganize data, perform calculations, filter data to specific views and many other tasks. This course focuses on these features and participants will learn how to more quickly build information from their data without having to perform these tasks manually and repetitively.

Upon completion of the course, participants will be able to:

1. Create PivotTables and PivotCharts
2. Use Slices and Timelines
3. Create nested formulas and use more advanced functions
4. Add insights to existing data to speed up data analysis

Participants should have completed or be comfortable with the **Intermediate Data Analysis Excel Topics** course objectives.

Note: The Beginner & Intermediate Data Analysis Excel Topics can be taught as a single 8-Hour course.



Data Analysis: Power Pivot, Power Query, Power BI

Microsoft Power Pivot and Power Query are features of Excel that expand upon the basic Excel functionality and greatly increase an employee's ability to be efficient and productive. Microsoft Power BI is a separate platform that integrates with Excel and Power Query creating an easy-to-use way to build and share information.

Participants should have completed or be comfortable with the **Beginner and Intermediate Data Analysis Excel Topics** course objectives.

Introduction to Modelling Data with Power Pivot (4-Hours):

Using Power Pivot allows for the use of Excel's Pivot Table functionality across multiple data sources. Power Pivot also introduces additional analysis functionality that can speed up data analysis.

Upon completion of the course, participants will be able to:

1. Set up static or live connections to outside data sources
2. Create and use Measures and KPIs
3. Set up Power Pivot in preparation for data analysis
4. Describe Power Pivot's data model and how it's used to link multiple data sources
5. Create and use pivot tables using multiple data sources

Introduction to Power Query (4-Hours):

Power query is a very powerful tool that can be used to improve efficiency by automating data transformation. Often, the data we receive is not ready for analysis. This course focuses on transforming the data for analysis and learning how to connect to and refresh from live data sources without having to recreate our analysis.

Upon completion of the course, participants will be able to:

1. Explain ETL (Extraction, Transformation & Loading) Basic terms and concepts
2. Get and transform data using power query
3. Describe data Extraction, Transformation and Loading concepts
4. Set up static or live connections to outside data sources
5. Explain the use of Power Query in aiding data analysis

Introduction to Microsoft's Power BI (4-Hours):

Power BI is a platform that can be used to Visualize and Analyze data and to publish the insights to the organization. This course focuses on an overview of the Power BI platform including how it integrates with Excel workbooks and Power Query.

Upon completion of the course, participants will be able to:

1. Prepare data for Analysis in Power BI
2. Describe how Power BI uses a data model
3. Explain several Visualization and Analysis tools in Power BI
4. Describe how to Deploy and maintain data assets with Power BI



Statistical Analysis of Data (4-Hours):

Using statistics is a great way to summarize your data and be more efficient with your data analysis.

Calculators and tools like Excel can provide the mathematical value of a statistic, but not necessarily what that number means and how to apply it to a business problem. This course focuses on how we use the statistics to summarize our data and get insights that we can use to further our analysis more quickly.

Upon completion of the course, participants will be able to:

1. Explain the difference between Statistics and Analytics
2. Describe measures of Central Tendency (mean, median & mode) and the value of each
3. Describe measures of Variation (range, variance & standard deviation) and the value of each
4. Perform linear regression analysis
5. Explain the value and limitations of correlations to determine the cause of problems
6. Analyze quantitative and qualitative data using statistics

Participants should have completed or be comfortable with the **Introduction to Data Analysis** course objectives.