## Instruction Schedule – Based on Part - Time Cohort

• 60 minutes: welcome and content read

• 60 minutes: lecture and demo lessons

• 30 minutes: work on challenges

• 30 minutes: walk through challenge solutions and wrap up

## Instruction Schedule – Based on Full - Time Cohort

### Morning session:

• 60 minutes: welcome and content read

• 60 minutes: lecture and demo lessons

• 30 minutes: work on challenges

• 30 minutes: walk through challenge solutions and wrap up

Break – 30 mins

### Afternoon session:

• 60 minutes: recap and content read

• 60 minutes: lecture and demo lessons

• 30 minutes: work on challenges

• 30 minutes: walk through challenge solutions and wrap up

## Excel Instructor Guide Introduction

Welcome and thank you for accepting the position of instructing Data Analytics and Excel Foundations! This workshop will introduce students to the field of data analytics and the basics of Microsoft Excel. Your role as the instructor is critical to the student learning experience. You will be meeting with students in a synchronous environment three times a week and should be prepared with the teaching goals, strategies, and structure for each class. This is where the instructor guide comes in! Each synchronous class covers one module and you will be provided an instructor guide for every module. The modules are further subdivided into lessons. The guide is meant to offer you the goals and key considerations for each module as a whole, but also each lesson. We hope this will help and make you feel supported in your very important role.

# Module 1 – Instructor guide

### Introduction to Data Analytics and Excel Foundations

## \*\*Before you start your lesson for module 1 of Introduction to Data Analytics and Excel Foundations, you will want to play the [Data Analytics Bootcamp Orientation video](https://youtu.be/TdF9WDZXNUk) (approximately 54 mins). This will go over student expectations as well as a detailed curriculum overview. Once students have completed the orientation video, you can jump right in!

### Module Learning Outcomes

In this module students will,

1. Define data analysis.
2. Identify the role of a data analyst.
3. Identify the basic features of an Excel workbook.
4. Breakdown data analysis terminology for comprehension and application.

### Module Overview Description

This module will introduce students to the basics of data analytics in terms of who data analysts are, what they do, and how they do it. Students will also be introduced to a key tool that data analysts use, Microsoft Excel, and complete a challenge activity using Excel.

### Considerations to Keep in Mind

* Some students may come with no experience in Excel whereas others might already be proficient.
* There is a workbook for the entire Data Analytics and Excel Foundations workshop. Encourage students to use the workbook to take notes.
* This class will start with an Orientation Video that will go over what to expect during their journey in the Data Analytics program. The approximate time of this video will be 45 minutes. You will start your lesson from there.
* The module will end with a challenge activity.

### Lesson 1: Introduction to the World of Data Analysis

* Make sure students are comfortable with key terminology.
* Assess student understanding of what analysis is and how or why it is used.

### Lesson 2: Who are Data Analysts?

* Walk students through examples of the following:
  + Report production
  + Developing patterns based on the raw data
  + Team collaboration
  + Streamlining data collection
* Guide students to in the following areas of data analysis:
  + Math and statistical skills
  + Strong business insight
  + Moderate computer science and coding skills
  + Develop key performance indicators (KPIs)
  + Create visualizations of the data and communication strategies
  + Utilize business intelligence and analytics tools.

### Lesson 3: Excel Basics

* Build the student’s knowledge on navigating Excel in the following areas:
  + Workbook
  + Worksheet
  + Quick Access Toolbar and how to customize
  + Rows, Columns, Cells
  + Formula Bar
  + Ribbon, Tab, Groups
  + Saving files
* Prepare the student to answer the following questions:
  + What is data analysis?
  + An example of data analysis is:
  + Why is data integrity important?
  + What is primary data collected from a source called?
  + How and why is interpreting data important?
  + Name three skills a Data Analyst needs to be successful.
  + When was Excel founded?
  + A file that contains one or more worksheets to help you organize data, is called?
  + What do you need to include to activate the formula bar?
  + Is the quick access toolbar customizable? If yes, how

# Module 2 – Instructor guide

### Spreadsheet Formatting and Data Entry

### Module Learning Outcomes

In this module students will,

1. Open and create a new workbook in Excel.
2. Assess the role of data entry.
3. Interpret how spreadsheets are organized into tables, columns, and rows.
4. Review spreadsheet features such as formatting, borders, and shading.
5. Create customizable features in Excel such as merging cells, sorting, and filtering.
6. Apply conditional formatting in Excel.

### Module Overview Description

### This module will introduce you to formatting in Excel, entering data, customizing Excel spreadsheets with borders, shading, and fonts, and conditional formatting. The module wraps up with a Challenge activity to create and format a workbook in Excel.

### Considerations to Keep in Mind

* Students will be starting to learn the foundations in Excel. Be sure to walk through step-by-step examples.
* There is a workbook for the entire Data Analytics and Excel Foundations workshop. Encourage students to use the workbook to take notes.
* The module will end with a challenge activity.

### Lesson 1: Formatting

* Make sure students get much needed practice in the different types of spreadsheet formatting.
* Formatting:
  + Make sure students are comfortable with ribbon and formatting tabs.
  + Assess the student's understanding of what analysis is and how/why it is used.

### Lesson 2: Data Entry

* Data Entry:
  + Walk students through examples of entering data:
  + Click an empty cell. For example, cell A1 on a new sheet is the first cell.
  + Remember, cells are referenced by the intersection of rows and columns. ​
  + A1, is the first row of column A. ​
  + Once you have clicked the cell, start typing. ​

### Lesson 3: Borders, Shading, and Fonts

* Give students hands-on practice by having them walk through worksheets and workbooks.
* Walk students through how to apply different cell styles.
* Introduce students to conditional formatting, customizing views, and applying filters to the data.
* Prepare the student to perform the following:
  + Create / Insert rows and columns
  + Apply cell borders and shading
  + Apply number formatting
  + Apply conditional formatting
  + Customize the page layout view
  + Sort and Filter the data
  + Merge some cells
  + Save files

# Module 3 – Instructor guide

### Basic Formulas and Functions

### Module Learning Outcomes

In this module students will,

### Recognize how and why cells are referenced.

### Interpret Excel symbols and what they mean.

### Recognize the difference between formulas and functions.

### Calculate the most common formulas and functions in Excel.

### Apply formula and function fundamentals.

### Module Overview Description

This module will introduce students to basic formulas and functions in Excel and how to use each. The module wraps up with a Challenge activity to apply formulas and functions in Excel.

### Considerations to Keep in Mind

* Students will need demo lesson walkthroughs, additional examples, and hands-on learning during this module.
* There is a workbook for the entire Data Analytics and Excel Foundations workshop. Encourage students to use the workbook to take notes.
* The module will end with a challenge activity.

### Lesson 1: What’s the Difference Between Formulas and Functions?

* Walk students through the differences in:
  + Formulas and functions and how they differ and compare to each other.

### Lesson 2: Formulas

* Walk students through examples of the following:
  + Different ways to enter/write a formula
  + Operators
  + Functions ​
  + Importance of referencing cells ​

### Lesson 3: Functions

* Walk students through examples and when to use each:
  + COUNT
  + MIN
  + MAX
  + AVERAGE
  + SUM

### Lesson 4: Inserting Formulas and Functions Into a Spreadsheet

* Walk students through cleaning, calculating, and research their data:
  + 70% 30% rule
  + How to use recently used functions.
  + How to use the AutoSum option.
  + How to sum a range of cells at one time.
* Prepare the student to answer the following questions:
  + What is the purpose of each function?
  + How can you select a range of cells?
  + Why do we need clean data?

# Module 4 – Instructor guide

### More Complex Functions

### Module Learning Outcomes

In this module students will,

### Break down the order of operations for Excel.

### Define terminology of functions.

### Navigate through the functions library in Excel.

### Identify the most used Excel functions.

### Create complex functions in Excel.

### Module Overview Description

This module will introduce you to Excel operators, creating functions, and using the functions library in Excel. The module wraps up with a Challenge activity to apply formulas and functions in Excel.

### Considerations to Keep in Mind

* Students will need demo lesson walkthroughs, additional examples, and hands-on learning during this module.
* There is a workbook for the entire Data Analytics and Excel Foundations workshop. Encourage students to use the workbook to take notes.
* The module will end with a challenge activity.

### Lesson 1: Operators and Their Purpose

* Walk students through the differences in the following operators:
  + Mathematical
  + Logical
  + Text
  + Reference
  + Make sure students know the order of operations and calculations to perform.
  + How do they apply to Excel functions

### Lesson 2: Creating Functions

* Walk students through examples of the following:
  + Syntax
  + Arguments
  + Syntax
  + Common terminology

### Lesson 3: Exploring the Functions Library

* Walk students through how to use the functions library.
* Walk students through examples and when to use each:
  + VLOOKUP
  + INDEX
  + MATCH
  + PROPER
  + LEN
  + CONCATENATE
  + TRIM
* Prepare the student to answer the following questions:
  + What is the difference between Logical, Text, Lookup and Reference functions?
  + When to use functions for data cleaning.
  + What functions are used to clean and error check your data?

# Module 5 - Instructor guide

### Chart Building

### Module Learning Outcomes

In this module students will,

1. Identify the importance of communicating data graphically.

### Use data to start analyzing and reporting.

### Detect patterns and relationships across data.

### Identify the most common types of charts and their elements.

### Demonstrate how to insert charts and modify them so they communicate information effectively.

### Module Overview Description

This module will introduce students to communicating data graphically and using charts in Excel. The module wraps up with a Challenge activity to create charts using data.

### Lesson 1: Communicating Data Graphically

* Walk students through the differences in the following:
  + After organizing the data into categories, what commonalities do you see?
  + What relationships or patterns are there?
  + What are the outliers (data point that differs significantly from other observations) or anomalies in the data?
  + What is the business objective (the purpose) of analyzing the data?

### Lesson 2: Types of Charts to Build

* Walk students through examples of the following:
  + Pie Charts
  + Line Charts
  + Scatter Charts
  + Histogram Chart
  + Bar Charts

### Lesson 3: Chart Elements

* Walk students through how to dissect charts and their elements.
* Walk students through the following:
  + Gridlines
  + Vertical (y) axis
  + Horizontal (x) axis
  + Axis Title
  + Data Markers
  + Data Labels
  + Chart Area
  + Plot Area

### Lesson 4: Charts and Excel

* Build student knowledge and guide them through the following:
  + Inserting charts
  + Selecting data for charts
  + Selecting recommended charts

This module has the [*Charts interactive*](https://content.bridgepointeducation.com/curriculum/file/e5cbada3-1246-4e4d-9806-b3a630150371/1/FS_DA_charts_interactive.zip/story.html)available for students to interact with and test their newly acquired skills. This interactive is an exploratory activity that walks you through different types of charts that are commonly used and also how to determine when to use each type.

# Module 6 - Instructor guide

### Pivot Tables

### Module Learning Outcomes

In this module students will,

### 1. Identify when to use pivot tables.

### 2. Create data-driven pivot tables.

### 3. Manipulate pivot table fields.

### 4. Identify trends based on pivot table data.

### Module Overview Description

This module will introduce students to pivot tables, pivot charts, how to create them, and when to use them. The module wraps up with a Challenge activity to construct pivot tables and charts.

### Lesson 1: The Way of Pivot Tables and Pivot Charts

* Walk students through the differences in the following:
  + Pivot tables:
    - Filters Area
    - Column Area (legend series)
    - Row Area (axis categories)
    - Value Area
  + Pivot chart
  + The difference between pivot tables and charts.

### Lesson 2: Inserting Pivot Tables and Charts

* Walk students through examples of the following:
  + Creating charts from a pivot table
  + Dragging and dropping fields

### Lesson 3: When to Use Pivot Tables and Charts

* Walk students through examples, how, and when to use pivot tables and charts.
  + How do you know when to switch from a recommended chart to pivot chart?
  + Research the data and identify which variables you will be using to identify patterns/trends.
  + Once you have selected the data to analyze, you want to create the illustration based off of the business objective.

# Module 7 - Instructor guide

### Data Cleaning and Error Checking

### Module Learning Outcomes

In this module students will,

### 1. Detect errors in data.

### 2. Effectively clean data.

### 3. Apply Excel functions to clean data.

### 4. Apply conditional formatting rules.

### Module Overview Description

This module will introduce students to error checking in Excel and how to clean their data. The module wraps up with a Challenge activity to clean a dataset.

### Lesson 1: Data Cleaning

* Build student knowledge and guide them through the following:
  + Why do you need to clean data?
  + What is dirty data?
  + Data cleaning workflow processes.
  + Data quality

### Lesson 2: Error Checking

* Walk students through what to look for when checking their data:
  + Validity
  + Inspecting/Exploration
  + Consistency
  + Uniformity
  + Profiling

### Lesson 3: Examples of Cleaning Data

* Walk students through most commonly used terms and examples when cleaning data.
  + Corrupt data
  + inconsistent data
  + typing error data
  + incomplete data
  + issues with data quality
  + data duplicates

### Lesson 4: Cleaning Data Using Excel

* Walk students through most commonly ways to clean data using Excel functions and formulas.
  + LOWER()
  + UPPER()
  + PROPER()
  + TRIM()
  + Find and replace
  + Number formatting
  + Conditional formatting

# Module 8 - Instructor guide

### Data Exploration

### Module Learning Outcomes

In this module students will,

### 1. Identify business objectives.

### 2. Recognize key performance indicators.

### 3. Create effective data dashboards.

### Module Overview Description

This module will introduce students to identify business objectives, key performance indicators, and data dashboards. In this module, they will be presented with scenarios to determine process flows. The module wraps up with a Challenge activity to create an Excel model.

### Lesson 1: Identify the Process and Business Objective

* Build student knowledge and guide them through the following steps:
  + Ask questions to ensure accuracy.
  + Reporting formats
  + Outline key performance indicators (KPIs)
  + Are you familiar with the dataset?
    - Ensure data quality
    - Outside data resources
    - Confidentiality, concerns, and proper protocol.

### Lesson 2: Exploring Scenarios

* Walk students through examples what types of questions to ask to clarify ad hoc requests or projects:
  + Where will the data be coming from?
  + Will this be a recurring report?
  + What is the metric for student success? Is this based on grades, graduation, etc.?
  + What is the report format?
  + Are you familiar with the data? If not, what are the next steps?
  + Next steps: Familiarize yourself with the raw data. Reach out and collaborate with others to help walk you through data terminology. Ask questions!

### Lesson 3: Key Performance Indicators

* Walk students through how to understand KPIs and their impact on data reporting.
* What are the possible solutions?
* Clearly define the process and the request.
* Guide you to determine how to structure your framework around the business objective.
* Fill in the blanks and answer your questions.
* Measure goal progress.
* Meet a specific objective.

### Lesson 4: Data Dashboards

* Walk students through how to identify the characteristics of an effective dashboard.
* Walk students through how to build a data model using Excel and incorporate the following areas:
  + Key performance indicators
  + Data
  + Using appropriate visuals
  + Current data
  + Logical layout
  + Well organized
  + Tell a story

# Module 9 - Instructor guide

### Data Model Building

### Module Learning Outcomes

In this module students will,

### 1. Identify different types of scenarios.

### 2. Detect questions to be asked.

### 3. Demonstrate how to call out key performance indicators (KPIs).

### 4. Recognize findings that support business objectives.

### Module Overview Description

This module will give students an opportunity to bring it all together with building a data model. They will determine objectives, KPIs, ask questions, clean data, and create a dashboard. The module wraps up with a Challenge activity to design and create a dashboard.

### Lesson 1: Identify the Purpose

* Build student knowledge and guide them through the following steps when creating a data model:
  + Exploratory analysis on the data
  + Clean your data
  + Applying formulas and functions
  + Chart building
  + Data dashboard
* Get students familiar with the following data exploration services available:
  + [DATA.GOV](https://www.data.gov/) - The home of the U.S. Government's open data. You can find all kinds of data, tools, and resources to perform your research.
  + [Kaggle.com](https://www.kaggle.com/) - Here users can find and publish their own data. You can search and build models based on the datasets.

### Lesson 2: Data Model Workflow

* Walk students through examples and how to start thinking about asking themselves the following questions when creating their data model and workflow:
  + What do you want your dashboard to look like?
  + How do you want to approach the business objective? What is your blueprint?
  + As you are exploring your data, take notes for yourself. What model do you plan to build?
* Creating a workflow:
  + Business objective and KPIs
  + Ask questions
  + Data exploration
  + Data cleaning
  + Explore scenarios
  + Create a data dashboard

### Lesson 3: Business Objective

* Walk students through how to build their data model and exploration around the business objective:
  + Data research
  + Requirements
  + Audience
  + If there are no concrete requirements set in place students will want to:
    - Identify their workflow based on the raw data
    - Create their own data story.

### Lesson 4: Data Exploration and Cleaning

* Walk students through how to clean data as they are exploring the data and how to approach that when creating a data model. Cover the following areas:
  + Blank cells
  + Duplicate data
  + Number formatting
  + Data accuracy
  + Communicating the data cleaning process to their audience

# Module 10 - Instructor guide

### Interpret and Report Data Findings

### Module Learning Outcomes

In this module students will,

### 1. Identify the business objective and problem to your model.

### 2. Detect questions that need to be solved using the data.

### 3. Create a blueprint to answer a question.

### 4. Develop an overview to support audience understanding.

### 

### Module Overview Description

In this module, students will learn how to build a narrative that interprets their data for an audience and how to build a storyboard that presents the data. The module wraps up with a Challenge activity to report findings using storyboards and effective communication.

### Lesson 1: Building a Narrative

* Build student knowledge and guide them through how to build their narrative:
  + Identify the problem that inspires your model.
  + Reconstruct the business objective in the form of a question.
  + Create the blueprint to describe how you will find data to answer the question.
  + Draft one or more visualizations that you can use to breathe life into the data.
* Make sense for the audience.
* Help the audience understand.
* Provide the audience with an overview of the problem or question.
* Summarize key points.
* Make sure insights are aligned.

### Lesson 2: Description and Interpretation

* Walk students through examples in how to structure analytical interpretations by creating an outline using the focused areas:
  + Write an introduction.
  + Develop your main talking points.
  + Support main ideas with evidence.
  + Identify how the analysis supports the business objective.
  + Discuss your findings.
  + Examine the decisions that your audience can make based on your information and interpretations.
* Walk students through how to effectively communicate findings:
  + Be clear.
  + Be logical.
  + Be relevant.
  + Be credible.

### Lesson 3: Storyboard

* Walk students through how to create a storyboard through the lens of their audience.
  + What are the key findings?
  + What appropriate visuals should be used?
  + What questions need to be answered?
  + What is the business objective and reason for the analysis?
* Make sure the audience:
  + Stays engaged.
  + Do not get confused.
  + Are able to ask follow up questions on the analysis.
  + Can draw conclusions based on the visuals you choose to tell your story.

This module has the [*Report and interpret findings*](https://content.bridgepointeducation.com/curriculum/file/9fdc42eb-99e2-43b2-8833-d211dccd4bce/1/fs_da_report_and_interpret_findings.zip/story.html) interactive available for students to interact with and test their newly acquired skills. This interactive presents a scenario that challenges you to present findings in the best way and includes a few learning check questions.