Day 1
Data Visualization Fundamentals

Module 1 - Data Visualization Concepts
- Data Visualization Today
- Data Visualization Components
- Visual Cues
- Coordinate Systems
- Measurement Scales
- Visual Context

Module 2 - Fundamentals of Visualization
- Data Visualization Methods
- Data Visualization Standards
- Visualization with Purpose
- Data Visualization Development

Module 3 - Visualization Techniques
- Visualization Techniques
- Visualizing Comparisons
- Visualizing Proportions
- Visualizing Relationships
- Visualizing Patterns

Module 4 - Visualization and BI
- Visualization and BI
- Analytics
- Visual Reporting
- Infographics
- Data Storytelling

Module 5 - Tools and Resources
- Data Visualization Tools
- Best Practices in Visualization

Day 2
Hands-on: Visual Data Analysis with R or Python

Module 1 – Introduction
• Course Expectations
• The 4 Levels of Analytics
• Getting to the “Why”
• The Datasets
• Data Types
• Introducing ggplot2

Module 2 – Distribution Analysis
• Example Business Questions
• Frequency Distributions
• Insights using Histograms:
  o Spread
  o Center
  o Shape
• Additional Insights with Histograms
• Medians & Quartiles
• Insights using Box Plots
• Building Histograms and Box Plots with ggplot2
• Hands-on Lab 1

Module 3 – Correlation Analysis
• Correlation vs. Causation
• Example Business Questions
• Correlation Concepts
• Insights with Scatter Plots:
  o Correlation Direction
  o Correlation Strength
  o Correlation Shape
• Additional Insights with Scatter Plots
• Building Scatter Plots with ggplot2
• Hands-on Lab 2

Module 4 – Multivariate Analysis
• What is Multivariate Analysis?
• Example Business Questions
• Bar Charts
• Proportion Bar Charts
• Multivariate Bar Charts
• Multivariate Distribution Analysis
• Creating Multivariate Visualizations with ggplot2
• Hands-on Lab 3

Module 5 – Time Series Analysis
• Example Business Questions
• Analyzing Time Series Patterns
  o Trend
  o Variability
  o Cycles
  o Rate of Change
  o Exceptions
• Line Charts for Time Series Analysis
  o Summary Stats in Excel
  o R’s summary Function
• Analyzing Variance over Time with Box Plots
• Additional Time Series Insights
• Building Time Series Visualization with ggplot2

Module 6 – Course Wrap-Up
• Additional Resources

Hands-on Lab 4

Day 3
Data Storytelling for Business Impact

Module 1 - Introduction to Data Storytelling
• Defining Data Storytelling
• Initial Data Analysis
• Drivers for Storytelling

Module 2 - Building the Context
• Identify the Context
• Building Blocks
• Choose What Message to Send
• Assembling the Plan

Module 3 - Craft the Story
• Story Components
• The Storyteller
• Characters and Personas
• The Story Lifecycle
• Kinds of Stories
• Narrative Elements
• Key Elements of a Great Story

Module 4 - Visual Design
• What Needs to Be Visualized?
• Visual Design Best Practices
• Time to Design
• Mapping the Visuals to the Story

Module 5 - Refine the Visual Story
• Refinement
• Cognitive Overload
• Visual Perception
• Visual Order
• Use of Contrast
• Test the Story

Module 6 - The Stakeholders’ View
• Final Test
• Look and Feel
• Size, Color, Placement
• Usability
• Aesthetics
• Access

Module 7 - Story Delivery
• Walkthrough
• Acceptance

Module 8 - Putting It All Together
• Review the Process
• Sample Story

Workshop
• Working with Your People, Projects, Processes and Data
• Choose from a provided list of topics for a tailored workshop. Workshop topic selection to be determined during pre-course discussion and planning with instructor.