

TABLEAU COURSE CONTENT

Audience: This course is designed for the beginner to intermediate-level Tableau user. It is for anyone who works with data – regardless of technical or analytical background. This course is designed to help you understand the important concepts and techniques used in Tableau to move from simple to complex visualizations and learn how to combine them in interactive dashboards.

Learning Objectives: At the end of this class, the student will be able to

- Understand the many options for connecting to data
- Understand the Tableau interface / paradigm – components, shelves, data elements, and
- The student will be able to use this knowledge to effectively create the most
- powerful visualizations.
- Create basic calculations including string manipulation, basic arithmetic calculations, custom
- aggregations and ratios, date math, logic statements and quick table calculations
- Able to represent your data using the following visualization types:
- Cross Tab
- Geographic Map
- Page Trails
- Heat Map
- Density Chart
- Scatter Plots
- Pie Chart and Bar Charts
- Small Multiples
- Dual Axis and Combo Charts with different mark types
- Options for drill down and drill across
- Use Trend Lines, Reference Lines and statistical techniques to describe your data
- Understanding how to use group, bin, hierarchy, sort, set and filter options effectively
- Work with the many formatting options to fine tune the presentation of your visualizations
- Understand how and when to Use Measure Name and Measure Value
- Understand how to deal with data changes in your data source such as field addition, deletion or name change
- Understand all of your options for sharing your visualizations with others
- Combine your visualizations into Interactive Dashboards and publish them to the web
- **Course includes:** This course will include extensive hands-on activities to re-enforce the skills and knowledge attained.

Course Topics:

Introduction and Overview

- Why Tableau? Why Visualization?
- Level Setting – Terminology
- Getting Started – creating some powerful visualizations quickly
- The Tableau Product Line
- Things you should know about Tableau

Getting Started

- Connecting to Data and introduction to data source concepts
- Working with data files versus database servers
- Understanding the Tableau workspace
- Dimensions and Measures
- Using Show Me!
- Tour of Shelves (How shelves and marks work)
- Building Basic Views
- Help Menu and Samples
- Saving and Sharing your work

Concepts and Options when Connecting to Data

- Overview of other connection options
- Joining multiple tables
- Data Blending
- Copy and Paste
- Data Extracts
- Custom SQL
- Publishing and Re-using Data Connections
- Understand how to deal with data changes in your data source such as field addition, deletion or name change
- Re-using and sharing data connections – the concept of meta data
- Working with multiple connections in the same workbook

Analysis

- Creating Views
- Marks
- Size and Transparency
- Highlighting
- Working with Dates
- Date aggregations and date parts
- Discrete versus Continuous³
- Dual Axis / Multiple Measures
- Combo Charts with different mark types
- Geographic Map
- Page Trails
- Heat Map
- Density Chart
- Scatter Plots
- Pie Charts and Bar Charts
- Small Multiples
- Working with aggregate versus disaggregate data
- Analyzing
- Sorting & Grouping
- Aliases
- Filtering and Quick Filters
- Cross-Tabs (Pivot Tables)
- Totals and Subtotals

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- Drilling and Drill Through
- Aggregation and Disaggregation
- Percent of Total
- Working with Statistics and Trend lines

Getting Started with Calculated Fields

- Working with String Functions
- Basic Arithmetic Calculations
- Date Math
- Working with Totals
- Custom Aggregations
- Logic Statements

Formatting

- Options in Formatting your Visualization
- Working with Labels and Annotations
- Effective Use of Titles and Captions
- Introduction to Visual Best Practices

Building Interactive Dashboards

- Combining multiple visualizations into a dashboard
- Making your worksheet interactive by using actions and filters
- An Introduction to Best Practices in Visualization

Sharing Workbooks

- Publish to Reader
- Packaged Workbooks
- Publish to Office
- Publish to PDF
- Publish to Tableau Server and Sharing over the Web

Putting it all together

- Scenario-based Review Exercises
- Best Practices

Where to get Further Assistance

- The Help File / Product Manual
- Knowledge base
- Forums
- Whitepapers & Books
- Further Training Offerings & Professional Services
- Technical Support

Filtering, Sorting & Grouping Filtering, Sorting and Grouping are fundamental concepts when working with and analyzing data. We will briefly review these topics as they apply to Tableau

- Advanced options for filtering and hiding
- Understanding your many options for ordering and grouping your data: Sort, Groups, Bins, Sets
- Understanding how all of these options inter-relate

Working with Data

In the Fundamentals class, we accepted the data for what it is! (with a basic overview of blending and joining data and working with the data engine). In the Advanced class, we will understand the difference between joining and blending data, and when we should do each. We will also consider the implications of working with large data sets, and consider options for when and how to work with extracts and the data engine. We will also investigate best practices in “sharing” data sources for Tableau Server users.

- Data Types and Roles
- Dimension versus Measures
- Data Types
- Discrete versus Continuous
- The meaning of pill colors
- Database Joins
- Data Blending
- Working with the Data Engine / Extracts and scheduling extract updates
- Working with Custom SQL
- Adding to Context
- Switching to Direct Connection
- Building meta data via shared Data Source connections
- Performance considering and working with big data

Working with Calculated Data and Statistics

In the Fundamentals Class, we were introduced to some basic calculations: basic string and arithmetic calculations and ratios and quick table calculations. In the Advanced class, we will extend those concepts to understand the intricacies of manipulating data within Tableau

- A Quick Review of Basic Calculations
- Arithmetic Calculations
- String Manipulation
- Date Calculations
- Quick Table Calculations
- Custom Aggregations
- Custom Calculated Fields
- Logic and Conditional Calculations
- Conditional Filters
- Advanced Table Calculations
- Understanding Scope and Direction
- Calculate on Results of Table Calculations
- Complex Calculations
- Difference From Average

- Discrete Aggregations
- Index to Ratios
- Understanding where Calculations Occur Statistics
- Reference / Trend Lines
- Statistical Calculations
- Summary Stats
- Cohort Analysis
- Working with Dates and Times
- Continuous versus Discrete Dates
- Dates and Times
- Reference Dates

Advanced Mapping

The Fundamentals class taught us the basics of Geographic Mapping. In the Advanced Class, we will learn the intricacies of working with the mapping function within Tableau including working with custom geographies and geo-coding, working with an alternate WMS server and spatially visualizing non-geographic data.

- Fundamentals Review: Building basic maps
- Fixing geographies
- Geographic Fields
- Map Options
- Built-in Demographics / Layering
- WMS – working with a Web Map Service
- Importing Custom Geographies
- Assigning Geographies to Non-Geographic fields
- Distance Calculations
- Spatially Visualizing non-Geographic Data using background images and geo-coding

Working with Parameters

In the Fundamentals class, we were introduced to parameters –How to create a parameter and use it in a calculation. In the Advanced class, we will go into more details on how we can use parameters to modify our title, create What-If analysis, etc

- Parameter Basics
- Data types of parameters
- Using parameters in calculated fields
- Inputting parameter values and parameter control options
- Advanced Usage of Parameters
- Using parameters for titles, field selections, logic statements, Top X

Building Advanced Chart Types and Visualizations / Tips & Tricks

This topic covers how to create some of the chart types and visualizations that may be less obvious in Tableau. It also covers some of the more common tips & tricks / techniques that we use to assist customers in solving some of their more complex problems.

- Bar in Bar
- Box Plot
- Bullet Chart
- Custom Shapes
- Gantt Chart
- Heat Map
- Pareto Chart
- Spark Line
- KPI Chart

Best Practices in Formatting and Visualizing

- Formatting Tips
- Drag to Legend
- Edit Legend
- Fill 100% Black Line
- Highlighting
- Labeling
- Legends
- Working with Nulls
- Table Options
- Annotations and Display Options
- Introduction to Visualization Best Practices

Building Better Dashboards

In the Fundamentals courses, we learned how we can combine several worksheets in a dashboard and publish that to the web. In the Advanced course, we will learn how to build effective and interactive applications via dash boarding.

- Interactive Dashboards
- Quick Filters
- Dashboard Objects
- Filter Actions
- Highlighting and Actions
- Performance
- Publish to Web
- Zones
- Guided Analytics
- Cascading Filters
- Highlighting
- Quick filter Options
- Select then See Visual
- Self-Populating Dashboards
- Shortcuts
- URL Actions

Overview – Working with Tableau Server

In Tableau Fundamentals, we saw that we could use Tableau Server as a mechanism to share our visualizations and dashboards. Now we will dig in a bit deeper.

- Publishing to Tableau Server – Overview of publishing, scheduling & security options
- Tableau Server Usage – Interacting with Published Visualizations

Wrap Up Activities

- Summary of what we have learned
- Advanced activities to pull together and solidify the concepts

Where to get Further Assistance

- The Help File / Product Manual
- Knowledge base
- Forums
- Whitepapers & Books
- Further Training Offerings & Professional Services
- Technical Support

Visual Analytics

How to be an Effective Analyst Using Tableau

Audience: You recognize the value of visual analytics; you have the software, and you know how to use it well. What a lot of people lack is an understanding of how to approach visual analysis. Analytical thinking is one of the most important skills you need to get the most out of Tableau. And even the most seasoned Tableau user can create an ineffective visualization if they don't understand the problem at hand or the perceptual basis for visualization best practices. This course was designed to fill those gaps. How does this course fit in with the rest of the curriculum offered at Tableau? Tableau Fundamentals and Advanced focus on Tableau Desktop; we teach you how to use the product, concentrating on features and functionality. This course is focused on visual analysis – a topic that isn't necessarily tool specific; however, everything we teach has a direct application to the way you use Tableau.

Prerequisites: You should already know how to use Tableau well. Ideally, you will have taken Fundamentals and Advanced courses, but this is not an official prerequisite. Be aware that we won't introduce you to product features or walk you through step by step instructions.

What to Bring: Please bring 3 examples of visualizations you've created in the past. These examples don't have to be complex, just something you've actually used or presented. Any format is fine (e.g., .twbx, .twb, image file).

Course Aims and Objectives

Aims: The aim of this course is to add to your visual analysis toolbox. You will strengthen your analytical skills and gain an understanding of visualization best practices. You will become a better analyst, designer, and communicator.

What you'll be able to do after this course:

- Describe the history, theory, and science behind data visualization, and how all this is built into Tableau's DNA. You will be able to evaluate Tableau's default actions and know when and why you might modify them to suit your analysis goals.
- Feel confident approaching data analysis. You will collect a set of techniques to guide your process, from planning your line of questioning to reviewing and communicating your findings.
- Demonstrate some basic principles of human visual perception and cognition and how they apply to chart design- the basis for Tableau's visual best practices. You will move beyond 'show me' to designing customized effective, meaningful visualizations.
- Intelligently critique charts and dashboards, and offer suggestions for improvement.
- Use multiple effective techniques for approaching different types of real-world analysis questions. You will leave with a toolkit that leads you to the appropriate visualizations for your question and data types.
- Return to work able to apply your new knowledge immediately. At the end of the course, you will synthesize and apply everything you learned in a realistic final project, allowing you to test yourself and seek additional help if needed.

Formats and Procedures: We will use a combination of traditional teaching methods (lecture, class discussion) and in-class activities.

Our Assumptions: This may not be a course about how to use Tableau, but it's still a Tableau course. We tried to ensure that all of the material is both applicable to Tableau, and of value to our customers. There are some topics that are relevant to visual analysis that we won't address in this course, simply because they don't apply to Tableau users (e.g., 3D charts). Other topics were omitted because you were more academic or technical than the scope of this applied course allows. If you want to learn more about visual analysis, there are several resources listed at the end of this document.

Course Topics

Overview

- What is visual analysis?
- Strengths/weakness of the visual system.

Laying the Groundwork for Visual Analysis

- Analytical Process
- Preparing for analysis

Getting, Cleaning and Classifying Your Data

- Cleaning, formatting and reshaping.
- Using additional data to support your analysis.
- Data classification

Visual Mapping Techniques

- Visual Variables : Basic Units of Data Visualization
- Working with Color
- Marks in action: Common chart types

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Solving Real-World Problems with Visual Analysis

- Getting a Feel for the Data- Exploratory Analysis.
- Making comparisons
- Looking at (co-)Relationships.
- Checking progress.
- Spatial Relationships.
- Try, try again.

Communicating Your Findings

- Fine-tuning for more effective visualization
- Storytelling and guided analytics
- Dashboards