Tableau Classroom Training
Course Descriptions

Tableau Fundamentals 2-Day Class

Course Duration: 2 Days

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.

Prerequisites: None

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 terminology. 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:
    o Cross Tab
    o Geographic Map
    o Page Trails
    o Heat Map
    o Density Chart
    o Scatter Plots
    o Pie Chart and Bar Charts
    o Small Multiples
    o Dual Axis and Combo Charts with different mark types
    o 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 Continuous

- o Dual Axis / Multiple Measures
- o Combo Charts with different mark types
- o Geographic Map
- o Page Trails
- o Heat Map
- o Density Chart
- o Scatter Plots
- o Pie Charts and Bar Charts
- o Small Multiples
- o Working with aggregate versus disaggregate data
- Analyzing
  - o Sorting & Grouping
  - o Aliases
  - o Filtering and Quick Filters
  - o Cross-Tabs (Pivot Tables)
  - o Totals and Subtotals
  - o Drilling and Drill Through
  - o Aggregation and Disaggregation
  - o Percent of Total
  - o Working with Statistics and Trendlines

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

Tableau Advanced 2-Day Class

Course Duration: 2 Days

Audience: This two day course is designed to provide you with the skills required to become a Tableau power user. The course is designed for the professional who has solid working experience with Tableau and wants to take it to the next level. You should have a deep understanding of all the fundamental concepts of building worksheets and dashboards, but may scratch your head when working with more complex issues.

Prerequisites: Tableau Fundamentals and/or equivalent

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

- Build advanced chart types and visualizations
- Build complex calculations to manipulate your data
- Work with statistics and statistical techniques
- Work with parameters and input controls
- Implement advanced geographic mapping techniques and use custom images and geo coding to build spatial visualizations of non-geographic data
- Implement all options in working with data: Joining multiple tables, data blending, performance considerations and working with the Data Engine, sharing your connections as meta data, and understand when to implement which connection method.
- Build better dashboards using techniques for guided analytics, interactive dashboard design and visual best practices
- Implement many efficiency tips and tricks
- Understand the basics of Tableau Server and other options for sharing your results

Course includes: This course will include extensive hands-on activities to re-enforce the skills and knowledge attained.

Course Topics:

Introduction and Getting Started

- Why Tableau? Why Visualization?
- The Tableau Product Line
- Level Setting – Terminology
- Getting Started – creating some powerful visualizations quickly
- Review of some Key Fundamental Concepts

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
- OLAP considerations (Overview)

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 dashboarding.

- Interactive Dashboards
  - Quick Filters
  - Dashboard Objects
  - Filter Actions
  - Highlighting and Actions
  - Performance
  - Publish to Web
  - Zones
- Guided Analytics
  - Cascading Filters
  - Highlighting
  - Quick filter Options

- o Select then See Visual
- o Self-Populating Dashboards
- o Shortcuts
- o 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

Course Duration: 2 Days

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

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

Putting It All Together and "Over to You"

- A review of major themes and learning objectives from the course. Checklist 'takeaway' for reviewing visualizations.
- The delegates have a two or three hour project to analyze some data. There will be advice from the instructor. Results will be reviewed and critiqued with the class.

Tableau Server Essentials

Course Duration: 1 Day

Audience: This course is designed as an overview for those who need to quickly learn the basics of administering a standard, out-of-the-box installation of Tableau Server. The course is also appropriate for those considering a deployment of Tableau Server, but who would like to learn more about the product prior to making a final decision. This course is primarily designed for IT professionals or technically savvy staff who will be responsible for the installation, administration, and maintenance of Tableau Server. Many of the concepts are covered from the perspective of deployments that are not overly large or complex. Those interested in advanced topics or detailed system integration of Tableau Server should consider the Tableau Server Comprehensive course instead.

Prerequisites: None

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

- Complete basic installation of Tableau Server

    o Find the minimum requirements for installing Tableau Server

    o List the (default) locations where Tableau Server files are installed

    o Explain the permissions necessary for setting up the "Run As" user account to run Tableau Server

    o List the (default) ports Tableau Server requires and describe how default ports can be changed during installation

    o Explain the purpose of and manage product keys

- Describe the functionality provided by Tableau Server and how it extends the power of Tableau Desktop to a broader audience

- Describe how Tableau Server fits into the Tableau Product Suite and how the various products interact

- Explain reasons for choosing Tableau Server

- From an administrator's perspective, describe how end-users interact with Tableau Server

    o Create a visualization in Tableau Desktop

    o Publish a visualization to Tableau Server

    o Include data extracts and schedule updates when publishing to Tableau Server

    o View and interact with visualizations published to Tableau Server

- o Utilize embed tags and URL parameters to include Tableau visualizations in webpages, portals, and applications
- Describe the functions of each of the components of Tableau Server (gateway server, VizQL server, application server, data server, backgrounder, repository service, and extract host) and how they interact
- Describe the levels of security in Tableau Server and define how they are used
  - o List the options for authentication within Tableau Server and explain the benefits of each
  - o Describe authorization and the flow of permissions within Tableau Server
  - o Manage content permissions
  - o Describe how database security works in Tableau Server
- Manage users, groups, sites, and permissions in Tableau Server
  - o Add, edit, and delete user accounts
  - o License Tableau Server users
  - o Assign and manage users' permissions
  - o Explain what content administrators do on Tableau Server
  - o Add, edit, and delete groups in Tableau Server
  - o Explain how multi-site installations of Tableau Server differ from single-site installations
  - o Add and manage sites in Tableau Server
- Describe content structures within Tableau Server
  - o Create projects in Tableau Server
  - o Assign workbooks to project on Tableau Server
  - o Assign permissions to workbooks and data sources
- Use the Tabadmin command line utility
  - o Start and stop Tableau Server
  - o Back up and clean up Tableau Server
  - o Change configuration settings

Course includes: This course will include a workbook containing key concepts on each topic covered and hands-on activities to reinforce the skills and knowledge attained. A flash drive containing supporting documents for the activities and further resources is also provided.

Tableau Server Comprehensive

Course Duration: 5 days

Audience: This course is designed to provide in-depth coverage of all aspects of Tableau Server including general usage, installation, integration, customization, advanced administration, automation, embedding content into third-party applications, monitoring, troubleshooting, data security, system architecture, and process flows. This course is intended for IT or technical personnel who will deploy enterprise installations of Tableau Server or a consultant who will be involved in many deployments. Concepts are covered thoroughly, with many hands-on activities where theory is applied and tested.

Prerequisites: Strong technical background in system support or architecture. Note that Tableau Server Essentials **is not** a prerequisite for this course.

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

- Install and configure Tableau Server
    - Find the minimum requirements for installing Tableau Server
    - List the (default) locations where Tableau Server files are installed
    - Explain the permissions necessary for setting up the "Server Run As User" account to run Tableau Server
    - List the (default) ports Tableau Server requires and describe how default ports can be changed during installation
    - Explain the purpose of and manage product keys
    - Explain how to get assistance with Tableau Server installation problems
    - List database drivers included in Tableau Server installation
    - Describe the differences in cache settings
    - Demonstrate making configuration changes to Tableau Server
    - Explain how SSL is implemented in Tableau Server
    - Discuss options for running Tableau Server in a distributed server environment
    - Customize the Tableau Server interface
    - Configure Tableau Server to meet architectural needs (high availability, high throughput

- Upgrade a Tableau Server installation

    - Gather information for the pre-upgrade checklist from an existing installation of Tableau Server

    - Clean up an existing installation of Tableau Server

    - Backup an existing installation of Tableau Server

    - Migrate an existing installation of Tableau Server to new hardware during an upgrade

    - Describe changes in server processes from earlier versions of Tableau Server, and their impact on upgrades

    - Explain the different processes involved in doing an in-place upgrade and in migrating to new equipment during an upgrade

    - Explain what processes must occur for a successful upgrade

- Describe the functionality that Tableau Server provides and how it extends the power of Tableau Desktop to a broader audience

- Describe how Tableau Server fits into the Tableau Product Suite and how the various products interact

- Explain reasons for choosing Tableau Server

- From an administrator's perspective, describe how end-users interact with Tableau Server

    - Create a visualization in Tableau Desktop

    - Publish a visualization to Tableau Server

    - Include data extracts and schedule updates when publishing to Tableau Server

    - View and interact with visualizations published to Tableau Server

    - Utilize embed tags and URL parameters to include Tableau visualizations in webpages, portals, and applications

- Describe the functions of each of the components of Tableau Server (gateway server, VizQL server, application server, data server, backgrounder, repository service, and extract host) and how they interact

- Describe Tableau Server's two licensing models and which is appropriate to specific situations

- Describe the levels of security in Tableau Server and define how they are used

    - List the options for authentication within Tableau Server and explain the benefits of each

    - Describe authorization and the flow of permissions within Tableau Server

    - Manage content permissions

    - Describe how database security works in Tableau Server

    - Explain how Tableau Server processes safeguard data

    - Configure Tableau Server to work through a firewall or DMZ

    - Describe scenarios in which Tableau Server might require a Secure Sockets Layer certificate and configure SSL certificates

- Manage users, groups, sites, and permissions in Tableau Server

  o Add, edit, and delete user accounts

  o License Tableau Server users

  o Assign and manage users' permissions

  o Explain what content administrators do on Tableau Server

  o Add, edit, and delete groups in Tableau Server

  o Explain how multi-site installations of Tableau Server differ from single-site installations

  o Add and manage sites in Tableau Server

- Describe content structures within Tableau Server

  o Create projects in Tableau Server

  o Assign workbooks to project on Tableau Server

  o Assign permissions to workbooks and data sources

- Use command line utilities to complete tasks

  o Start and stop Tableau Server

  o Back up and clean up Tableau Server

  o Change configuration settings

  o Automate tasks

- Manage data sources

  o Define data sources, data connections, and data extracts

  o Create data connections and make them available to Tableau Desktop users

  o Describe the database server authentication process

- Monitor and audit a Tableau Server installation

  o Describe the default views created for monitoring Tableau Server performance

  o Discuss best practices and common mistakes in designing views

  o Identify and resolve data access issues

  o Research infrastructure issues

  o Research permissions issues

  o Find log files for Tableau Server

  o Archive and delete log files

- Troubleshoot Tableau Server

  o Identify licensing issues within Tableau Server

  o Alter licensing to correct problems

  o Access additional resources for help with Tableau Server

Course includes: This course will include a workbook containing key concepts on each topic covered and hands-on activities to reinforce the skills and knowledge attained. A flash drive containing supporting documents for the activities and further resources is also provided.