Course 1 – Foundations: Data, Data, Everywhere

This is the first course in the Google Data Analytics Certificate. These courses will equip you with the skills you need to apply to introductory-level data analyst jobs. Organizations of all kinds need data analysts to help them improve their processes, identify opportunities and trends, launch new products, and make thoughtful decisions. In this course, you'll be introduced to the world of data analytics through hands-on curriculum developed by Google. The material shared covers plenty of key data analytics topics, and it's designed to give you an overview of what's to come in the Google Data Analytics Certificate. Current Google data analysts will instruct and provide you with hands-on ways to accomplish common data analyst tasks with the best tools and resources.

Course content

1. **Introducing data analytics**: Data helps us make decisions, in everyday life and in business. In this first part of the course, you will learn how data analysts use tools of their trade to inform those decisions. You will also get to know more about this course and the overall program expectations.
2. **Thinking analytically**: Data analysts balance many different roles in their work. In this part of the course, you will learn about some of these roles and the key skills that are required. You will also explore analytical thinking and how it relates to data-driven decision making.
3. **Exploring the wonderful world of data**: Data has its own life cycle, and data analysts use an analysis process that cuts across and leverages this life cycle. In this part of the course, you will learn about the data life cycle and data analysis process. They are both relevant to your work in this program and on the job as a future data analyst. You will be introduced to applications that help guide data through the data analysis process.
4. **Setting up a data toolbox**: Spreadsheets, query languages, and data visualization tools are all a big part of a data analyst's job. In this part of the course, you will learn the basic concepts to use them for data analysis. You will understand how they work through examples provided.
5. **Discovering data career possibilities**: All kinds of businesses value the work that data analysts do. In this part of the course, you will examine different types of businesses and the jobs and tasks that analysts do for them. You will also

learn how a Google Data Analytics Certificate will help you meet many of the requirements for a position with these organizations.
6. Completing the **Course Challenge**: At the end of this course, you will be able to put everything you have learned into perspective with the Course Challenge. The Course Challenge will ask you questions about the main concepts you have learned and then give you an opportunity to apply those concepts in two scenarios.

Course 2 – Ask Questions to Make Data-Driven Decisions

This is the second course in the Google Data Analytics Certificate. These courses will equip you with the skills needed to apply to introductory-level data analyst jobs. You'll build on your understanding of the topics that were introduced in the first Google Data Analytics Certificate course. The material will help you learn how to ask effective questions to make data-driven decisions, while connecting with stakeholders' needs. Current Google data analysts will continue to instruct and provide you with hands-on ways to accomplish common data analyst tasks with the best tools and resources.

Course content

1. **Asking effective questions**: To do the job of a data analyst, you need to ask questions and problem-solve. In this part of the course, you'll check out some common analysis problems and how analysts solve them. You'll also learn about effective questioning techniques that can help guide your analysis.
2. **Making data-driven decisions**: In analytics, data drives decision making. In this part of the course, you'll explore data of all kinds and its impact on decision making. You'll also learn how to share your data through reports and dashboards.
3. **Mastering spreadsheet basics**: Spreadsheets are an important data analytics tool. In this part of the course, you'll learn both why and how data analysts use spreadsheets in their work. You'll also explore how structured thinking can help analysts better understand problems and come up with solutions.
4. **Always remembering the stakeholder**: Successful data analysts learn to balance needs and expectations. In this part of the course, you'll learn strategies for managing the expectations of stakeholders while establishing clear communication with your team to achieve your objectives.
5. Completing the **Course Challenge**: At the end of this course, you will be able to put everything you have learned into practice with the Course Challenge. The

Course Challenge will ask you questions about key principles you have been learning about and then give you an opportunity to apply those principles in three scenarios.

Course 3 – Prepare Data for Exploration

This is the third course in the Google Data Analytics Certificate. These courses will equip you with the skills needed to apply to introductory-level data analyst jobs. As you continue to build on your understanding of the topics from the first two courses, you'll also be introduced to new topics that will help you gain practical data analytics skills. You'll learn how to use tools like spreadsheets and SQL to extract and make use of the right data for your objectives and how to organize and protect your data. Current Google data analysts will continue to instruct and provide you with hands-on ways to accomplish common data analyst tasks with the best tools and resources.

Course content

1. **Understanding data types and structures**: We all generate lots of data in our daily lives. In this part of the course, you will check out how we generate data and how analysts decide which data to collect for analysis. You'll also learn about structured and unstructured data, data types, and data formats as you start thinking about how to prepare your data for exploration.
2. **Understanding bias, credibility, privacy, ethics, and access**: When data analysts work with data, they always check that the data is unbiased and credible. In this part of the course, you will learn how to identify different types of bias in data and how to ensure credibility in your data. you will also explore open data and the relationship between and importance of data ethics and data privacy.
3. **Databases**: Where data lives: When you are analyzing data, you will access much of the data from a database. It's where data lives. In this part of the course, you will learn all about databases, including how to access them and extract, filter, and sort the data they contain. You will also check out metadata to discover the different types and how analysts use them.
4. **Organizing and protecting your data**: Good organization skills are a big part of most types of work, and data analytics is no different. In this part of the course, you will learn the best practices for organizing data and keeping it secure. You

will also learn how analysts use file naming conventions to help them keep their work organized.

5. **Engaging in the data community (optional)**: Having a strong online presence can be a big help for job seekers of all kinds. In this part of the course, you will explore how to manage your online presence. You will also discover the benefits of networking with other data analytics professionals.
6. **Completing the Course Challenge**: At the end of this course, you will be able to apply what you have learned in the Course Challenge. The Course Challenge will ask you questions about the key concepts and then will give you an opportunity to put them into practice as you go through two scenarios.

Course 4 – Process Data from Dirty to Clean

This is the fourth course in the Google Data Analytics Certificate. These courses will equip you with the skills needed to apply to introductory-level data analyst jobs. In this course, you'll continue to build your understanding of data analytics and the concepts and tools that data analysts use in their work. You'll learn how to check and clean your data using spreadsheets and SQL as well as how to verify and report your data cleaning results. Current Google data analysts will continue to instruct and provide you with hands-on ways to accomplish common data analyst tasks with the best tools and resources.

Course Contents

1. **Ensuring data integrity**. Data integrity is necessary to ensure a successful analysis. In this part of the course, you will explore methods and steps that analysts take to check data for integrity. This includes knowing what to do when you have an insufficient amount of data. You will also learn about sample size, avoiding sample bias, and using random samples. All of these measures also help to ensure a successful data analysis.
2. **Understanding clean data**. Every data analyst wants clean data to work with when performing an analysis. In this part of the course, you will learn the difference between clean and dirty data. You will practice data cleaning techniques in spreadsheets and other tools.
3. **Cleaning data using SQL**. Knowing a variety of ways to clean data can make an analyst's job much easier. In this part of the course, you will use SQL to clean

data from databases. You will explore how SQL queries and functions can be used to clean and transform your data before an analysis.

4. **Verifying and reporting cleaning results**. Cleaning data is an important step in the data analysis process. In this part of the course, you will verify that data is clean and report data cleaning results. With verified clean data, you will be ready for the next step in the data analysis process.
5. **(Optional) Adding data to your resume**. Creating an effective resume will help you in your data analytics career. In this part of the course, you will learn all about the job application process. Your focus will be on building a resume that highlights your strengths and relevant experience.
6. **Completing the Course Challenge**. At the end of this course, you will be able to apply what you have learned in the Course Challenge. The Course Challenge will ask you questions about the key concepts and then will give you an opportunity to put them into practice as you go through prepared scenarios.

Course 5 – Analyze Data to Answer Questions

This is the fifth course in the Google Data Analytics Certificate. These courses will equip you with the skills needed to apply to introductory-level data analyst jobs. In this course, you'll explore the "analyze" phase of the data analysis process. You'll take what you've learned to this point and apply it to your analysis to make sense of the data you've collected. You'll learn how to organize and format your data using spreadsheets and SQL to help you look at and think about your data in different ways. You'll also find out how to perform complex calculations on your data to complete business objectives. You'll learn how to use formulas, functions, and SQL queries as you conduct your analysis. Current Google data analysts will continue to instruct and provide you with hands-on ways to accomplish common data analyst tasks with the best tools and resources.

Course content

- **Organizing data to begin analysis.** Organizing data makes the data easier to use in an analysis. In this part of the course, you will learn the importance of organizing your data with sorting and filtering. You will explore organizing data in both spreadsheets and with SQL queries and temporary tables.
- **Formatting and adjusting your data.** As you move closer to analyzing your data, you will want to have the data formatted and ready to go. In this part of the

course, you will learn all about converting and formatting data, including how to use SQL queries to combine data. You will also discover the value of feedback and support from your colleagues and how it can lead to new insights that you can apply to your work.

- **Aggregating data for analysis**. During an analysis, you might need to combine data to gain insights and complete business objectives. In this part of the course, you will explore the functions, procedures, and syntax to combine, or aggregate data. You will learn how to combine data within multiple cells in spreadsheets, and within multiple database tables using SQL queries.
- **Performing data calculations**. Calculations are one of the more common tasks that data analysts perform during an analysis. In this part of the course, you will explore formulas, functions, and pivot tables in spreadsheets and SQL queries. All of these are used in data calculations. You will also learn about the benefits of using SQL to manage temporary database tables.
- **Completing the Course Challenge**. At the end of this course, you will be able to put everything you have learned into perspective with the Course Challenge. The Course Challenge will ask you questions about the main concepts and then give you an opportunity to apply what you have learned in three scenarios.

Course 6 – Share Data Through the Art of Visualization

This is the sixth course in the Google Data Analytics Certificate. These courses will equip you with the skills needed to apply to introductory-level data analyst jobs. You'll learn how to visualize and present your data findings as you complete the data analysis process. This course will show you how data visualizations, such as visual dashboards, can help bring your data to life. You'll also explore Tableau, a data visualization platform that will help you create effective visualizations for your presentations. Current Google data analysts will continue to instruct and provide you with hands-on ways to accomplish common data analyst tasks with the best tools and resources.

Course content

- **Data visualization**: Data visualization is in many ways the culmination of the data analysis process. In this part of the course, you will be introduced to the concepts involved in data visualization. You will learn about accessibility, design thinking, and other factors that play a role in visualizing the data in your analysis.

- **Data visualizations with Tableau**: Tableau is a tool that can help analysts create effective data visualizations. In this part of the course, you will learn all about Tableau and its uses. You will also explore the importance of creativity and clarity while visualizing your findings appropriately.
- **Stories about your data**: Connecting your objective with your data through insights is essential to good data storytelling. In this part of the course, you will learn about data-driven stories and their attributes. You will also gain an understanding of how to use Tableau to create dashboards and dashboard filters.
- **Developing presentations and slideshows:** In this part of the course, you will discover how to give an effective presentation about your data analysis. You will consider all aspects of your analysis when creating a presentation and learn how to use multiple data sources in the data visualizations you will share. In addition, you will learn how to anticipate potential limitations and questions that might arise and how to provide useful answers to stakeholders.
- **Course Challenge**: At the end of this course, you will be able to put everything you have learned into practice with the Course Challenge. The Course Challenge will ask you questions about key principles you have been learning about and then give you an opportunity to apply those principles in two scenarios.

Course 7 – Data Analysis with R Programming

This course is the seventh course in the Google Data Analytics Certificate. These courses will equip you with the skills needed to apply to introductory-level data analyst jobs. In this course, you'll learn about the programming language known as R. You'll find out how to use RStudio, the environment that allows you to work with R. This course will also cover the software applications and tools that are unique to R, such as R packages. You'll discover how R lets you clean, organize, analyze, visualize, and report data in new and more powerful ways. Current Google data analysts will continue to instruct and provide you with hands-on ways to accomplish common data analyst tasks with the best tools and resources.

Course content

- **Understanding the basics of R**: R is a programming language that can be used to perform tasks in every phase of the data analysis process. In this part of the course, you will learn about R and RStudio, an integrated developer environment

(IDE) for R. You will explore the benefits of using RStudio to work with R. RStudio enables you to easily leverage the features and functionality of R.

- **Programming using RStudio**: In this part of the course, you will explore the fundamental concepts associated with R. You will learn about functions and variables that you can use in your calculations and other programming. You will also learn about R packages, which are collections of R functions, code, and sample data that you can use in RStudio.
- **Working with data in R:** The R programming language was designed to work with data at all stages of the data analysis process. In this part of the course, you will examine how R can help you structure, organize, and clean your data through functions and other processes. You will learn about data frames and how to work with them in R. You will also revisit the concept of data bias and how you can use R to address it.
- **Visualizations, aesthetics, and annotations**: R is a great tool for creating detailed visualizations. In this part of the course, you will learn how to use R to generate and troubleshoot visualizations. You will also explore the features of R and RStudio that can help you improve the aesthetics of your visualizations. You will learn how to annotate visualizations and save the changes.
- **Documentation and reports**: R has a number of different options to explore when you are ready to save and present your analysis. In this part of the course, you will explore R Markdown, a file format for making dynamic documents with R. You will learn how to format and export R Markdown and incorporate R code chunks in your documents.
- **Course challenge**: At the end of the course you will apply everything you have learned in the Course Challenge. The Course Challenge will ask you questions about the key skills you have been practicing and will give you an opportunity to demonstrate those skills in three scenarios.