Google Data Analytics Certificate

The Google Data Analytics Certificate is an interactive online program designed to prepare learners with the foundational skills needed for jobs in data analysis. Developed by Google, this program explores the fundamentals of data analysis, including the collection, transformation, and organization of data in order to draw conclusions, make predictions, and drive informed decision- making.

Learners who complete the Google Data Analytics Certificate will:

- Gain an immersive understanding of the practices and processes used by a junior or associate data analyst in their day-to-day job.

- Learn key analytical skills (data cleaning, analysis, & visualization) and tools (spreadsheets, SQL, R programming, Tableau).

- Understand how to clean and organize data for analysis, and complete analysis and calculations using spreadsheets, SQL, and R programming.

- Learn how to visualize and present data findings in dashboards, presentations, and commonly used visualization platforms.

Equipment Needed: All learners must have a computer with reliable internet to access course content. Reliable internet access is necessary to complete hands-on course activities. Headphones are also a good option for a noisy environment.

SEMESTER PLAN:

Below includes a detailed guide for you to follow as you complete the course work. The goal is to keep you on track to finish your certificate within the allotted timeframe.

Expectations and Best Practices
Online learning allows for the flexibility of working at your own pace to meet a deadline, but it's helpful to establish a routine to stay on target and remember when work is due! Here's one that has worked well for students previously:

- **Monday/Tuesday**: Review all new material for the week and watch all assigned videos by end of day on Tuesday.

- **Rest of the week:** Complete work at your own pace. Aim to complete at least one task each day, no matter how large or small. With work, you may complete core coursework on Saturdays and Sundays. _Reminder:_ To ensure you are actively participating, discussion posts may require you to post multiple times throughout the week.

- **Sunday:** Typically, weekly assignments are due at the end of the day on Sunday. Review that you have completed each assignment for that week.

Now that you have reviewed the coursework guidelines, please take a moment to review a general breakdown of each course, including estimates of how much time each may take based on the

COURSE 1: Foundations: Data, Data, Everywhere

Data analysts help organizations of all kinds improve their processes, identify opportunities and trends, launch new products, and make thoughtful decisions. In this course, learners will be introduced to the world of data analytics by exploring how they're already using data to make decisions in their daily life. They'll also learn about the data lifecycle and the data analysis process, as well as some tools that data analysts use on a daily basis. The material in this course is designed to give learners an overview of what's to come in the Google Data Analytics Certificate. Current Google data analysts will instruct and provide learners with hands-on ways to accomplish common data analyst tasks with the best tools and resources. No experience is necessary.

Week 1

MODULE 1: Introducing Data Analytics and Analytical Thinking (7 hours total module time)

Data helps us make decisions in both everyday life and in business. In this part of the course, learners will discover how data analysts use a variety of tools and skills to inform those decisions. They'll also get to know more about this course and the overall program expectations.

Module items

- 2 discussion prompts
- 3 interactive plug-ins
- 3 practice quizzes
- 1 graded quiz
- 13 readings
- 13 videos

MODULE 2: The Wonderful World of Data (10 hours total module time)

Here learners will explore the data life cycle and data analysis process, which are both relevant to the work they'll do in this program and on the job. Learners will also be introduced to applications that help guide data through the data analysis process.

Module items

- 1 discussion prompt
- 1 interactive plug-in
- 3 practice quizzes
- 1 graded quiz
- 4 readings
- 5 videos

Week 2

MODULE 3: Set up Your Data Analytics Toolbox (4 hours total module time)

Spreadsheets, query languages, and data visualization tools are all a big part of a data analyst's job. This part of the course introduces these basic concepts and explores how to use them for data analysis. Learners will discover how these concepts work through interesting examples.

Module items

- 2 discussion prompts
- 1 activity
- 2 practice quizzes
- 1 graded quiz
- 7 readings
- 6 videos

MODULE 4: Become a Fair and Impactful Data Professional (4 hours total module time)

In this part of the course, learners will examine different types of businesses and the jobs and tasks that analysts do for them. They'll also learn how a Google Data Analytics Certificate will help them meet many of the requirements for an analyst position.

Module items

- 1 discussion prompt
- 1 interactive plug-in
- 1 activity
- 3 practice quizzes
- 1 graded quiz
- 5 readings
- 11 videos

COURSE 2: Ask Questions to Make Data-Driven Decisions

Learners will build on their understanding of the topics that were introduced in the first course of this certificate program. In particular, they'll explore how data analysts use structured thinking to solve business problems. Then, they'll explore how to ask effective questions and use the answers to tell a meaningful story about data. Finally, they'll discover strategies for effectively communicating and collaborating with their stakeholders when defining a problem and presenting data insights. This will enable learners to support and advance business goals with data.

Week 3

MODULE 1: Ask Effective Questions (5 hours total module time)

Data analysts are constantly asking questions in order to find solutions and identify business potential. In this part of the course, learners will discover effective questioning techniques that will help guide their analysis.

Module items

- 2 discussion prompts
- 2 interactive plug-ins
- 5 practice quizzes
- 1 graded quiz
- 6 readings
- 8 videos

MODULE 2: Make Data-driven Decisions (3 hours total module time)

In analytics, data drives decision-making. This is an opportunity for learners to explore all kinds of data and its impact on all sorts of business decisions, and to learn how to effectively share their data through reports and dashboards.

Module items

- 1 discussion prompt
- 1 interactive plug-in
- 4 practice quizzes
- 1 graded quiz
- 6 readings
- 6 videos

MODULE 3: Spreadsheet Magic (9 hours total module time)

Spreadsheets are a key data analytics tool. Here, learners will examine both why and how data analysts use them in their work. They'll also investigate how structured thinking helps analysts understand problems and come up with solutions.

Module items

- 1 discussion prompt
- 1 interactive plug-in
- 5 activities
- 4 practice quizzes
- 1 graded quiz
- 10 readings
- 9 videos

MODULE 4: Always Remember the Stakeholder (4 hours total module time)

Successful data analysts balance the needs and expectations of their team and the stakeholders they support. In this part of the course, learners will consider strategies for managing stakeholder expectations while establishing clear communication with their team.

Module items

- 1 discussion prompt
- 1 interactive plug-in
- 5 activities
- 3 practice quizzes

- 1 graded quiz
- 7 readings
- 14 videos

COURSE 3: Prepare Data for Exploration

As learners continue to build on their understanding of the topics from the first two courses, they'll be introduced to new topics that will help them gain practical data analytics skills. In this course, learners will identify and explore different types of data and data structures that can be used to understand and respond to a business problem. Then, learners will learn to identify any bias in data and to verify its credibility. Learners will add to their data analyst toolbox by further exploring data within spreadsheets and databases. Finally, they'll learn more about engaging with the data community and managing their online presence. All of these skills will come in handy, no matter where their career as a data analyst takes them.

Week 5

MODULE 1: Data types and Structures (5 hours total module time)

A massive amount of data is generated every single day. In this part of the course, learners will discover how this data is generated and how analysts decide which data to use for analysis. They'll also learn about structured and unstructured data, data types, and data formats as they start thinking about how to prepare their data for analysis.

Module items

- 1 discussion prompt
- 2 interactive plug-ins
- 1 activity
- 4 practice quizzes
- 1 graded quiz
- 9 readings
- 9 videos

MODULE 2: Data Responsibility (4 hours total module time)

Before data analysts work with data, they must confirm that it is unbiased and credible. After all, if an individual starts their analysis with unreliable data, they won't be able to trust their results. In this part of the course, learners will identify bias in data and ensure their data is credible. They'll also explore open data and the importance of data ethics and data privacy.

Module items

- 1 discussion prompt
- 2 interactive plug-ins
- 1 activity
- 5 practice quizzes
- 1 graded quiz

- 4 readings
- 12 videos

Week 6

MODULE 3: Database Essentials (12 hours total module time)

When analyzing large datasets, data analysts access much of the data from a database. Here learners will learn about databases, including how to access them and extract, filter, and sort the data they contain. They'll also explore metadata to discover its many facets and how analysts use it to better understand their data.

Module items

- 1 discussion prompt
- 5 activities
- 6 practice quizzes
- 1 graded quiz
- 12 readings
- 10 videos

MODULE 4: Organize and Protect Data (2 hours total module time)

Good organizational skills are especially important in data analytics. In this part of the course, learners will become familiar with best practices for organizing data and keeping it secure. They'll also understand how analysts use file naming conventions to help them keep their work organized.

Module items

- 3 practice quizzes
- 1 graded quiz
- 3 readings
- 3 videos

MODULE 5: Engage in the Data Community (2 hours total module time)

Having a strong online presence can be a big help for job seekers of all kinds. In this part of the course, learners will explore how to manage their online presence, and discover the benefits of networking with other data analytics professionals.

Module items

- 1 practice quiz
- 5 readings
- 7 videos

COURSE 4: Process Data from Dirty to Clean

Learners will continue to build their understanding of data analytics and the concepts and tools that data analysts use in their work. They'll clean data by checking it for completeness and correctness. Additionally, they'll review a variety of approaches to clean data in spreadsheets and databases. Then, they'll gain essential troubleshooting skills that will enable them to fix any errors. An important step in cleaning data is creating reports to communicate the changes that have been made to the data. Learners will examine how to do this in order to ensure the accuracy and reliability of data. Together, these skills will help learners ensure their data analysis is successful.

Week 7

MODULE 1: The Importance of Integrity (5 hours total module time)

Data integrity is critical to successful analysis. In this part of the course, learners will explore methods and steps that analysts take to check their data for integrity, including knowing what to do when they don't have enough data. They'll also learn about random samples and understand how to avoid sampling bias. All of these methods will help ensure that their analysis is successful.

> Module items
> - 1 discussion prompt
> - 1 interactive plug-in
> - 5 practice quizzes
> - 1 graded quiz
> - 9 readings
> - 8 videos

MODULE 2: Clean Data for More Accurate Insights (7 hours total module time)

Every data analyst wants to analyze clean data. In this part of the course, learners will be taught the difference between clean and dirty data, and practice cleaning data in spreadsheets and other tools.

> Module items
> - 1 discussion prompt
> - 1 interactive plug-in
> - 2 activities
> - 3 practice quizzes
> - 1 graded quiz
> - 9 readings
> - 10 videos

Week 8

MODULE 3: Data Cleaning with SQL (6 hours total module time)
Knowing a variety of ways to clean data can make a data analyst's job much easier. In this part of the course, learners will use SQL to clean data from databases. In particular, they'll explore how SQL queries and functions can be used to clean and transform their data before an analysis.

Module items
- 1 discussion prompt
- 1 interactive plug-in
- 2 activities
- 2 practice quizzes
- 1 graded quiz
- 5 readings
- 9 videos

MODULE 4: Verify and Report Cleaning Results   (3 hours total module time)

As learners clean data, they'll make changes to the original dataset. It's important to verify the changes are accurate and to update teammates. In this part of the course, learners will be taught to verify that data is clean and to report their data cleaning results. With verified clean data, they're ready to begin analyzing!

Module items
- 3 practice quizzes
- 1 graded quiz
- 5 readings
- 6 videos

MODULE 5: Add Data to your Resume (4 hours total module time) *Optional*

Creating an effective resume will help learners excel in their data analytics careers. Here they'll learn all about the job application process, with a focus on building a resume that highlights their strengths and relevant experience.

Module items
- 1 discussion prompt
- 3 activities
- 3 practice quizzes
- 1 graded quiz
- 4 readings
- 8 videos

MODULE 6: Course Wrap-up (1 hour total module time)

Learners will review the course glossary and prepare for the next course in the Google Data Analytics Certificate program.

Module items
- 2 readings
- 1 video

COURSE 5: Analyze Data to Answer Questions

Learners will explore what it means to actually analyze their data. They'll take what they've learned up to this point and apply it to make sense of the data they've collected. They'll use spreadsheets and SQL to write functions and queries that organize, sort, filter, format, convert, and combine data. As they complete more advanced tasks, they'll become more comfortable using spreadsheets and SQL. These skills will enable them to analyze a wide variety of datasets.

Week 9

MODULE 1: Organize Data for More Effective Analysis (6 hours total module time)

Organizing data makes it easier to analyze. This part of the course teaches the importance of organizing data through sorting and filtering. Learners will explore these processes in spreadsheets and with SQL queries and temporary tables.

> Module items
> - 1 discussion prompt
> - 1 interactive plug-in
> - 2 activities
> - 3 practice quizzes
> - 1 graded quiz
> - 9 readings
> - 9 videos

MODULE 2: Format and Adjust Data (5 hours total module time)

As learners move closer to analyzing their data, they'll want to have the data formatted and ready to go. Here learners will discover converting and formatting data, including how SQL queries can help them combine data. They'll also find out the value of feedback and support from their colleagues and how it can lead to new insights that they can apply to their work.

> Module items
> - 1 interactive plug-in
> - 1 activity
> - 3 practice quizzes
> - 1 graded quiz
> - 9 readings
> - 10 videos

Week 10

MODULE 3: Aggregate Data for Analysis (10 hours total module time)

As part of an analysis, learners will often have to combine data in order to gain insights and complete business objectives. In this part of the course, learners will explore the functions, procedures, and syntax

involved in combining, or aggregating, data. They'll learn how to do this within multiple cells in spreadsheets and within multiple database tables using SQL queries.

Module items
- 1 interactive plug-in
- 5 activities
- 3 practice quizzes
- 1 graded quiz
- 10 readings
- 8 videos

MODULE 4: Perform Data Calculations   (11 hours total module time)

Calculations are one of the most common tasks for data analysts. In this part of the course, learners will explore formulas, functions, and pivot tables in spreadsheets and SQL queries to help with their calculations. They'll also learn about the benefits of using SQL to manage temporary database tables.

Module items
- 1 interactive plug-in
- 5 activities
- 4 practice quizzes
- 2 graded quizzes
- 12 readings
- 12 videos

COURSE 6: Share Data Through the Art of Visualization

This course starts with the basics: learning principles and best practices for data visualization. Learners will gain hands-on experience creating data visualizations in Tableau, a specialized data visualization tool. Beyond the basics, there's a focus on professional tips for creating exciting visualizations, presentations, and talking points about data. This course also covers how to prepare and deliver effective presentations, so learners can confidently handle the most challenging questions about their data analysis projects. Once learners have completed this course, they'll be on their way to becoming a talented data storyteller!

Week 11

MODULE 1: Visualize Data (8 hours total module time)
In this module, learners will delve into the various types of data visualizations and explore what makes an effective visualization. They'll also learn about accessibility, design thinking, and other factors that will help them use data visualizations to effectively communicate data insights.

Module items
- 2 discussion prompts
- 1 interactive plug-in
- 1 activity
- 4 practice quizzes

- 1 graded quiz
- 12 readings
- 11 videos

MODULE 2: Create Data Visualizations with Tableau (6 hours total module time)

Tableau is a business intelligence and analytics platform that helps people visualize, understand, and make decisions with data. In this part of the course, learners will become well-versed in Tableau's dynamic capabilities and learn to inject creativity and clarity into their visualizations, making their findings easy to understand.

Module items
- 1 discussion prompt
- 2 activities
- 2 practice quizzes
- 1 graded quiz
- 7 videos
- 7 readings

Week 12

MODULE 3: Craft Data Stories (6 hours total module time)

Connecting objectives with data through insights is essential to data storytelling. In this part of the course, learners will get acquainted with the principles of data-driven storytelling and learn to craft compelling narratives using Tableau's dashboard and filtering capabilities, giving life to their data insights.

Module items
- 1 discussion prompt
- 2 interactive plug-ins
- 3 activities
- 3 practice quizzes
- 1 graded quiz
- 4 readings
- 9 videos

MODULE 4: Develop Presentations and Slideshows (5 hours total module time)

Learners will discover how to give an effective presentation about their data analysis. This final module teaches them to construct insightful presentations that resonate with their audience. Learners will explore how to anticipate and address potential questions and to articulate the limitations of their data, ensuring a robust and credible narrative for their stakeholders.

Module items
- 3 discussion prompts
- 5 practice quizzes

- 1 graded quiz
- 8 readings
- 12 videos

[COURSE 7: Data Analysis with R Programming](#)

Learning a programming language offers a new, creative way to approach the data analysis process. In this course, learners will use the R programming language to analyze data. R is designed to work with data and has a supportive, diverse online community that includes everyone from professional analysts to new learners. To begin, learners will become familiar with some core programming concepts. Then, they'll get to know the software applications and tools that are unique to R, such as the RStudio environment and Tidyverse packages. Finally, they'll discover how R lets them analyze data in new and more powerful ways. By the end of this course, learners will be able to clean, organize, visualize, and present data using R. Their knowledge of R will help them stand out as a new data analyst and give them a strong foundation for future success.

Week 13

MODULE 1: The basics of R (9 hours total module time)

R is a programming language that can help learners throughout the data analysis process. In this part of the course, learners will discover R and RStudio, the environment they'll use to work in R. They'll explore the benefits of using R and RStudio as well as the components of RStudio that will help them get started.

> Module items
> - 1 discussion prompt
> - 4 activities
> - 2 practice quizzes
> - 1 graded quiz
> - 7 readings
> - 6 videos

MODULE 2: Program with RStudio (7 hours total module time)

Using R can help learners complete their analysis efficiently and effectively. In this part of the course, they'll explore the fundamental concepts associated with R,including functions and variables for calculations and other programming. They'll also learn about R packages, which are collections of R functions, code, and sample data that they can use in RStudio.

> Module items
> - 1 discussion prompt
> - 1 interactive plug-in
> - 2 activities
> - 4 practice quizzes
> - 1 graded quiz
> - 9 readings

Week 14

MODULE 3: Work with data in R(8 hours total module time)

The R programming language was designed to work with data at all stages of the data analysis process. Learners will examine how R can help them structure, organize, and clean their data using functions and other processes. They'll learn about data frames and how to work with them in R, and revisit the issue of data bias and how R can help.

Module items
- 1 discussion prompt
- 1 interactive plug-in
- 4 activities
- 3 practice quizzes
- 1 graded quiz
- 7 readings
- 8 videos

MODULE 4: Visualizations, Aesthetics, and Annotations (9 hours total module time)

R is a tool well-suited for creating detailed visualizations. In this part of the course, learners will discover how to use R to generate and troubleshoot visualizations. They'll also explore the features of R and RStudio that will help them with the aesthetics of visualizations and with annotating and saving them.

Module items
- 1 interactive plug-in
- 5 activities
- 3 practice quizzes
  1 graded quiz
  7 readings
  9 videos

MODULE 5: Use R Markdown to Make Documents and Reports (7 hours total module time)
When learners are ready to save and present their analyses, R has different options to consider. In this part of the course, learners will explore R Markdown, a file format for making dynamic documents with R. They'll find out how to format and export R Markdown, including how to incorporate R code chunks in their documents.

Module items
- 4 activities
- 3 practice quizzes
- 1 graded quiz
- 7 readings
- 8 videos

The Google Data Analytics Certificate Capstone Project is an optional opportunity for learners to use the skills and competencies they've gained in this program by doing the six steps of the data analysis process from start to finish. Completing the Capstone Project will help them put together everything they've learned and showcase their data analysis skills in their portfolio and on future job applications. First, they'll explore capstone projects, case studies, and portfolios to understand what they are and how data analysts use them to demonstrate their skills. Then, they'll be presented with realistic scenarios that they can use for their case study. Alternatively, they can think of a case that aligns with their personal interests. Once they've completed their case study, they can include it in their online portfolio. They'll be able to refer to it as an example of their work when they interview for data analyst positions. And finally, after they complete their project, they can use the final materials in this course to help them prepare for a job interview.

Week 15

MODULE 1: Learn about Capstone Basics (2 hours total module time)

A capstone is a concluding or crowning achievement. In this part of the course, learners will be introduced to capstone projects, case studies, and portfolios, and how they help employers better understand their skills and capabilities. Learners will also have an opportunity to explore online portfolios of real data analysts.

Module items

- 1 discussion prompt
- 1 interactive plug-in
- 1 practice quiz
- 4 readings
- 3 videos

MODULE 2: Build your Portfolio (4 hours total module time) *Optional*

Here learners will get an overview of two possible tracks to complete their case study. They can use a dataset from one of the business cases provided or search for a public dataset and develop a business case for an area of personal interest. In addition, they will be introduced to several platforms for hosting their completed case study.

Module items

- 4 discussion prompts
- 1 interactive plug-in
- 1 activity
- 2 practice quizzes

- 9 readings
- 3 videos

Week 16

MODULE 3: Use Your Portfolio (3 hours total module time) *Optional*

Portfolios are meant to be seen and explored. Learners will discover how to bring up their portfolio and highlight specific skills in interview scenarios. They'll also create and practice an elevator pitch for their case study. Finally, they'll learn how to position themselves as a top applicant for data analyst jobs. These useful and practical career tips are the final topics of the program.

Module items

- 2 practice quizzes
- 7 readings
- 6 videos

MODULE 4: Put Your Certificate to Work (2 hours total module time)

Earning a Google Data Analytics Certificate is a badge of honor. It's also a real badge. Here learners will find out how to claim their certificate badge and display it on their LinkedIn® profile. They'll also be introduced to job search benefits that they can claim as a certificate holder, including access to the Big Interview platform and Byteboard interviews.

Module items

- 1 discussion prompt
- 1 interactive plug-in
- 1 practice quiz
- 1 graded quiz
- 3 readings
- 3 videos