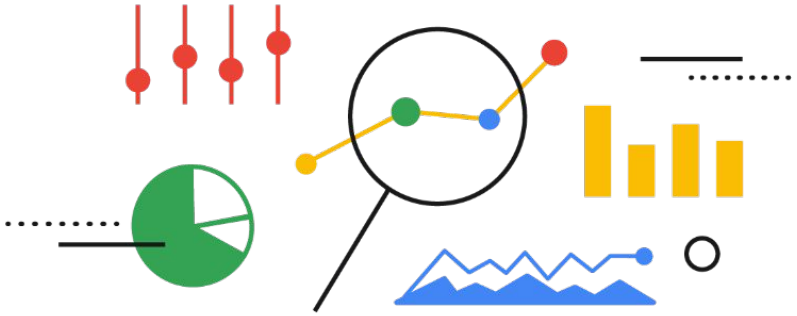
Google Advanced Data Analytics Certificate



Key Competencies & Job Mapping

Grow with Google

Developing talent for in-demand jobs

GOOGLE CAREER CERTIFICATES

Google Career Certificates provide learners with the skills they need to apply for more than 2.0 million in-demand jobs across the fields of data analytics, digital marketing & e-commerce, IT support, project management, and user experience (UX) design, with a median salary of $72,000.[1]

These certificates are taught and developed by Google employees working in these fields; they are hands-on, practical, and rigorous. At under 10 hours per week, you can complete the certificate in less than six months. 75% of certificate graduates report a positive career outcome (e.g., new job, promotion, or raise) within six months of completion.[2]

GOOGLE ADVANCED DATA ANALYTICS CERTIFICATE

The Google Advanced Data Analytics Certificate teaches learners how to use machine learning, predictive modeling, and experimental design to collect and analyze large amounts of data.

Designed for people working in the field of data analytics or graduates of the Google Data Analytics Certificate program, this stackable credential helps learners enhance their technical skills with tools like Jupyter Notebook, Python, and Tableau and unlock more opportunities for career progression.

144K+

job openings in advanced data analytics [1]

$118K+

median salary in advanced data analytics [1]

THE GOOGLE ADVANCED DATA ANALYTICS CERTIFICATE PREPARES LEARNERS FOR IN-DEMAND JOBS SUCH AS:

- Senior data analyst
- Junior data scientist
- Data science analyst
- Data analytics scientist

[1] Lightcast™ US Job Postings (Last 12 Months: Jan. 1, 2022 - Dec. 31, 2022)
[2] Based on program graduate survey, United States 2022

Program Overview

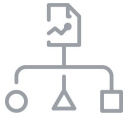
Upon completing the **Google Advanced Data Analytics Certificate,** program graduates will:

- Explore the roles of data professionals within an organization
- Create data visualizations and apply statistical methods to investigate data
- Build regression and machine learning models to analyze and interpret data
- Communicate insights from data analysis to stakeholders


Data Science


Machine Learning

Coding Python


Predictive Modeling


Exploratory Data Analytics


Statistical Analysis

Course 1
Foundations of Data Science

Course 2
Get Started with Python

Course 3
Go Beyond the Numbers: Translate Data into Insights

Course 4
The Power of Statistics

Course 5
Regression Analysis: Simplify Complex Data Relationships

Course 6
The Nuts and Bolts of Machine Learning

Course 7
Google Advanced Data Analytics Capstone

CONTENT BREAKDOWN:


300 Videos


220 Readings


103 Quizzes


13 Hands-on activities

Course 1 — Foundations of Data Science

This is the first of seven courses in the Google Advanced Data Analytics Certificate, which will help develop the skills needed to apply for more advanced data professional roles, such as an entry-level data scientist or advanced-level data analyst. Data professionals analyze data to help businesses make better decisions. To do this, they use powerful techniques like data storytelling, statistics, and machine learning.

In this course, learners begin their journey by exploring the role of data professionals in the workplace. They'll also learn about the project workflow PACE (Plan, Analyze, Construct, Execute) and how it can help you organize data projects.

By the end of this course, learners will be able to:

- Describe the functions of data analytics and data science within an organization
- Identify tools used by data professionals
- Explore the value of data-based roles in organizations
- Investigate career opportunities for a data professional
- Explain a data project workflow
- Develop effective communication skills

SKILLS ACQUIRED:

- ❏ Effective written communication
- ❏ Cross-functional team dynamics
- ❏ Project management
- ❏ Asking effective questions
- ❏ Sharing insights and ideas with stakeholders

TOPICS:

- ★ Introduction to data science concepts
- ★ The impact of data today
- ★ Your career as a data professional
- ★ Data applications and workflow
- ★ Thinking like a data professional

CONTENT BREAKDOWN:

	38	Videos
	37	Readings
	14	Quizzes
	3	Hands-on activities

Course 2 — Get Started With Python

This is the second of seven courses in the Google Advanced Data Analytics Certificate. The Python programming language is a powerful tool for data analysis. In this course, learners are taught the basic concepts of Python programming and how data professionals use Python on the job. They'll explore concepts such as syntax, loops, strings, lists, dictionaries, and object-oriented programming.

Google employees who currently work in the field will guide learners through this course by providing hands-on activities that simulate relevant tasks, sharing examples from their day-to-day work, and helping enhance learners' data analytics skills.

By the end of this course, learners will be able to:

- Define what a programming language is and why Python is used by data scientists
- Create Python scripts to display data and perform operations
- Control the flow of programs using conditions and functions
- Utilize different types of loops when performing repeated operations
- Identify data types such as integers, floats, strings, and booleans
- Manipulate data structures such as , lists, tuples, dictionaries, and sets
- Import and use Python libraries such as NumPy and pandas

SKILLS ACQUIRED:

- ❑ Coding
- ❑ Data visualization
- ❑ Using comments to enhance code readability
- ❑ Python
- ❑ Jupyter Notebook

TOPICS:

- ★ Hello, Python
- ★ Functions and conditional statements
- ★ Loops and strings
- ★ Data structures in Python
- ★ Course 2 end-of-course project

CONTENT BREAKDOWN:

	50	Videos
	35	Readings
	17	Quizzes
	1	Hands-on activities

Course 3 — Go Beyond the Numbers: Translate Data into Insights

This is the third of seven courses in the Google Advanced Data Analytics Certificate. In this course, learners discover how to find the story within data and tell that story in a compelling way. They'll discover how data professionals use storytelling to better understand their data and communicate key insights to teammates and stakeholders. They'll also practice exploratory data analysis and learn how to create effective data visualizations.

By the end of this course, learners will be able to:

- Apply Python tools to examine raw data structure and format
- Select relevant Python libraries to clean raw data
- Demonstrate how to transform categorical data into numerical data with Python
- Utilize input validation skills to validate a data set with Python
- Identify techniques for creating accessible data visualizations with Tableau
- Determine decisions about missing data and outliers
- Structure and organize data by manipulating date strings

SKILLS ACQUIRED:

- ❑ Exploratory data analysis
- ❑ Data visualization
- ❑ Effective communication
- ❑ Tableau
- ❑ Python

TOPICS:

- ★ Find and share stories using data
- ★ Explore raw data
- ★ Clean your data
- ★ Data visualizations and presentations
- ★ Course 3 end-of-course project

CONTENT BREAKDOWN:

	39	Videos
	32	Readings
	16	Quizzes
	3	Hands-on activities

Course 4 — The Power of Statistics

This is the fourth of seven courses in the Google Advanced Data Analytics Certificate. In this course, learners discover how data professionals use statistics to analyze data and gain important insights. They'll explore key concepts such as descriptive and inferential statistics, probability, sampling, confidence intervals, and hypothesis testing. They'll also learn how to use Python for statistical analysis and practice communicating their findings like data professionals.

By the end of this course, learners will be able to:

- Describe the use of statistics in data science
- Use descriptive statistics to summarize and explore data
- Calculate probability using basic rules
- Model data with probability distributions
- Describe the applications of different sampling methods
- Calculate sampling distributions
- Construct and interpret confidence intervals
- Conduct hypothesis tests

SKILLS ACQUIRED:

- ❑ Statistical analysis
- ❑ Probability distributions
- ❑ Hypothesis testing
- ❑ Effective communication
- ❑ Python

TOPICS:

- ★ Introduction to statistics
- ★ Probability
- ★ Sampling
- ★ Confidence intervals
- ★ Hypothesis testing
- ★ Course 4 end-of-course project

CONTENT BREAKDOWN:

	56	Videos
	39	Readings
	22	Quizzes
	1	Hands-on activities

Course 5 — Regression Analysis: Simplify Complex Data Relationships

This is the fifth of seven courses in the Google Advanced Data Analytics Certificate. Data professionals use regression analysis to discover the relationships between different variables in a dataset and identify key factors that affect business performance.

In this course, learners practice modeling variable relationships. They'll learn about different methods of data modeling and how to use them to approach business problems. They'll also explore methods such as linear regression, analysis of variance (ANOVA), and logistic regression.

By the end of this course, learners will be able to:

- Explore the use of predictive models to describe variable relationships, with an emphasis on correlation
- Determine how multiple regression builds upon simple linear regression at every step of the modeling process
- Run and interpret one-way and two-way ANOVA tests
- Construct different types of logistic regressions including binomial, multinomial, ordinal, and Poisson log-linear regression models

SKILLS ACQUIRED:

- ❑ Statistical analysis
- ❑ Regression modeling
- ❑ Predictive models
- ❑ Effective communication
- ❑ Python

TOPICS:

- ★ Introduction to complex data relationships
- ★ Simple linear regression
- ★ Multiple linear regression
- ★ Advanced hypothesis testing
- ★ Logistic Regression
- ★ Course 5 end-of-course project

CONTENT BREAKDOWN:

	49	Videos
	27	Readings
	24	Quizzes
	1	Hands-on activities

Course 6 — The Nuts and Bolts of Machine Learning

This is the sixth of seven courses in the Google Advanced Data Analytics Certificate. In this course, learners explore machine learning, which uses algorithms and statistics to teach computer systems to discover patterns in data. Data professionals use machine learning to help analyze large amounts of data, solve complex problems, and make accurate predictions.

Learners will focus on two main types of machine learning: supervised and unsupervised. They'll learn how to apply different machine learning models to business problems and become familiar with specific models such as Naive Bayes, decision tree, random forest, and more.

By the end of this course, learners will be able to:

- Apply feature engineering techniques using Python.
- Construct a Naive Bayes model
- Describe how unsupervised learning differs from supervised learning
- Code a K-means algorithm in Python
- Evaluate and optimize the results of a K-means model
- Explore decision tree models, how they work, and their advantages over other types of supervised machine learning
- Characterize bagging in machine learning, specifically for random forest models
- Distinguish boosting in machine learning, specifically for XGBoost models
- Identify tuning model parameters and how they affect performance and evaluation metrics

SKILLS ACQUIRED:

- ❏ Machine Learning
- ❏ Predictive Models
- ❏ Effective Communication
- ❏ Python
- ❏ Stack Overflow

TOPICS:

- ★ The Different Types of Machine Learning
- ★ Workflow for Building Complex Models
- ★ Unsupervised Learning Techniques
- ★ Tree-Based Modeling
- ★ Course 6 end-of-course project

CONTENT BREAKDOWN:

	56	Videos
	37	Readings
	19	Quizzes
	1	Hands-on activities

Course 7 — Google Advanced Data Analytics Capstone

This is the seventh and final course of the Google Advanced Data Analytics Certificate. In this course, learners will complete a capstone project that includes key concepts from each of the six preceding courses. Throughout the project, they'll use their new skills and knowledge to develop data-driven insights for a specific business problem.

By the end of this course, learners will be able to:

- Create and/or update your resume
- Create and/or update your professional portfolio
- Develop a data frame
- Compose data visualizations
- Use statistics to analyze and interpret data
- Build, interpret, and evaluate regression models
- Utilize machine learning techniques in Python

SKILLS ACQUIRED:

- ❑ Data analysis
- ❑ Machine learning
- ❑ Executive summaries
- ❑ Python
- ❑ Technical interview preparation

TOPICS:

- ★ Capstone project
- ★ Data-focused career resources
- ★ Put your Advanced Data Analytics Certificate to work

CONTENT BREAKDOWN:

	12	Videos
	13	Readings
	3	Quizzes
	3	Hands-on activities