Welcome to Google Cloud Big Data and Machine Learning Fundamentals. This course was designed to showcase real world data and ML challenges and give you practical hands-on expertise in solving those challenges using Google Cloud in our labs. It’s a critical course to master because it covers the most common use cases you and your team will encounter on your big data journey.
Introductions

Your instructor + You
Background
Position
Organization
Facilities

Parking  Facilities  Food
Course etiquette

- Please silence your phone and take calls outside.
- Recording this class is prohibited.
- Ask questions interactively or via chat (online).
Agenda

The Infrastructure Behind Google Cloud

Product Recommendations Using Cloud SQL and Spark

Predicting Visitor Purchases Using BigQuery ML

Real-time Dashboards with Pub/Sub, and Data Studio

Deriving Insights from Unstructured Data Using Machine Learning

These are the modules that make up this course.
An explosion of data

“By 2020, some 50 billion smart devices will be connected, along with additional billions of smart sensors, ensuring that the global supply of data will continue to more than double every two years”


You’re already taking this course, which means that you recognize the importance of big data processing. But why is this skill set in such high demand?

According to McKinsey research, by 2020 we’ll have 50 billion devices connected in the Internet of Things. These devices will cause the supply of data to double every two years.

Unfortunately, though, only about 1% of the data generated today is actually analyzed, according to McKinsey.

This state of affairs provides a wide-open opportunity because there is a lot of value in data.

I believe that the ability to build applications that handle large amounts of data and derive insights from that data in an automated manner is a skill that will be well-rewarded in the marketplace. Individuals who have this skill will have many opportunities open to them, and companies that develop this skill will become more successful.

There is a great demand for data skills

So, the opportunity for data analysts, data scientists, and data engineers—we’ll talk about what these roles are, and what the differences are—the opportunity for all three of these roles is clear.

At its core, this course is primarily geared towards Data Engineers. That said, if you’re an analyst, ML engineer, or tech lead for your team it’s a valuable skill to know how all of the big data and ML products interact to solve some of the most common challenges that data engineers face.

And those challenges are...
Big data challenges

- Migrating your existing big data workloads to an environment where you can effectively analyze your data.
- Interactively analyzing large (and by that I mean terabytes to petabytes) datasets of historical data.
- Building scalable pipelines that can handle streaming data, so that your business can make data-driven decisions more quickly.
- And finally, building ML models so that you are not just reacting to data, you are able to make predictive, forward-looking actions using your data.
Lab environment

For each lab, Qwiklabs offers:

- A free set of resources for a fixed amount of time
- A clean environment with permissions

Qwiklabs provisions you with Google account credentials, so you can access the Google Cloud Console for each lab at no cost. Specifically, for each lab, Qwiklabs offers:

- A free set of resources for a fixed amount of time
- A clean environment with permissions
Open Qwiklabs

1. Open an incognito window (or private/anonymous window).
2. Go to the Qwiklabs URL your instructor provides.
3. Sign In with existing account or Join with new account (with email you used to register for the course).
4. Launch the course from My Learning.

Access issues
The process to open Qwiklabs can differ based on credentials used. Please reach out to your trainer if you have any access issues.

Go ahead and open Qwiklabs:
1. **Open an incognito window** (or private/anonymous window). Use of an incognito browser window reduces the risk that you will accidentally do the labs using your own Google Cloud account instead of Qwiklabs.
2. **Go** to the Qwiklabs URL your instructor provides.
3. **Sign** in with an existing account or **Join** with a new account (with email you used to register for the course).
4. Launch the course from **My Learning**.
View your labs

Do **NOT** launch a lab until instructed to do so!

<table>
<thead>
<tr>
<th>Labs</th>
<th>Lecture Notes</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>✅</td>
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<td>Lab completed</td>
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<td>▲</td>
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<td>Lab Currently Disabled</td>
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</tbody>
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After you launch the course, you can view your labs. The lab list will indicate if a lab is:

- Completed (by you)
- To be completed
- Or not yet available

Your instructor will let you know when it's time to launch a lab. Once you start a lab, you won't be able to pause and restart it, so you'll need a continuous block of time to complete the work.
Within the course, you can also view the lecture notes. You can download these as PDF files.
You can view the course materials within Qwiklabs as follows:

1. Click on *My Learning* in the left-hand navigation bar.
2. Select the class from the *Completed Courses* list.

Materials are available for 2 years following the completion of a course.