



Drug Discovery Essentials on Google Cloud

Course description

Learn how AI, Machine Learning, Generative AI, Vertex AI, and BigQuery accelerate drug discovery by reducing research timelines, improving precision, and enabling scalable scientific innovation on Google Cloud.

Participants will learn how Vertex AI enables scalable MLOps workflows, how BigQuery supports petabyte-scale omics data analysis, and how Generative AI is revolutionizing molecular discovery and drug design. The course also covers ethical AI, explainable AI (XAI), compliance, and governance considerations within highly regulated scientific environments.

- Course level: Intermediate
- Duration: 1 day

Activities

This course includes instructor-led training, research-focused discussions, ai and drug discovery use case demonstrations, vertex ai workflow walkthroughs, omics data analytics demonstrations, clinical research scenarios, and future technology exploration sessions to reinforce learning.

Course objectives

In this course, you will learn to:

- Understand the impact of AI and ML on drug discovery workflows.

- Describe how Google Cloud supports pharmaceutical research and development.
- Use Vertex AI concepts to streamline scientific pipelines.
- Identify Generative AI applications in drug discovery.
- Analyze genomics, proteomics, and clinical trial datasets.
- Understand scalable MLOps approaches for scientific workloads.
- Explore compliance, governance, and explainable AI requirements.
- Evaluate future trends in AI-driven drug discovery.

Key features

- AI-Driven Drug Discovery
- Google Cloud for Life Sciences
- Vertex AI and MLOps for Research
- Generative AI for Molecular Discovery
- Omics and Clinical Data Analytics
- Scalable Scientific Computing
- Responsible AI in Healthcare Research
- Future of AI in Drug Discovery

Intended audience

This course is intended for:

- Pharmaceutical Leaders
- Biotechnology Leaders
- Research Scientists
- Clinical Researchers
- Life Sciences Professionals
- AI Innovation Leaders
- Healthcare Technology Strategists

Prerequisites

We recommend that attendees of this course have:

- Basic Google Cloud knowledge (helpful but not mandatory)
- Familiarity with Machine Learning fundamentals (helpful but not essential)
- Interest in pharmaceutical research, biotechnology, or life sciences innovation

Products covered

- Vertex AI
- BigQuery
- Google Kubernetes Engine

Course outline

Module 01 - Introduction to AI and ML for Drug Discovery

- How AI Impacts the Drug Discovery Pipeline
- Next-Generation Drug Discovery Tools
- Google Cloud for Drug Discovery
- Security and Compliance

Module 02 - Building AI Pipelines for Drug Discovery with Vertex AI

- What is Vertex AI?
- Anatomy of an AI Pipeline
- End-to-End Pipeline Workflow
- MLOps for Scientific Research

Module 03 - Generative AI in Drug Discovery

- What is Generative AI?
- Core Applications in Drug Discovery
- Google Cloud AI Toolkit
- Challenges and Best Practices

Module 04 - AI for Omics and Clinical Research

- Harnessing Genomics with BigQuery
- AI for Proteomics
- Integrated Clinical and Real-World Data

- Future of AI in Drug Discovery

Module 05 - Future Trends and Research Innovation

- Emerging AI Technologies
- Explainable AI (XAI)
- Ethical AI in Healthcare
- Research Innovation Roadmap

Certification details

CloudThat Course Completion Certificate will be awarded to all learners who complete the training.

FAQs

Who should attend this course?

This course is designed for pharmaceutical leaders, biotechnology professionals, scientists, and healthcare innovators interested in AI-driven drug discovery.

Is prior machine learning experience required?

No. Familiarity with machine learning concepts is helpful but not mandatory.

What Google Cloud services are covered?

The course covers Vertex AI, BigQuery, and Google Kubernetes Engine as part of the drug discovery workflow.

Will Generative AI applications be discussed?

Yes. Generative AI is a dedicated module focusing on molecular discovery, drug design, and AI-assisted pharmaceutical innovation.

Does the course cover genomics and omics analytics?

Yes. Learners explore genomics, proteomics, and clinical data analytics using BigQuery and AI-powered tools.

Is the course hands-on?

The course primarily uses instructor-led demonstrations, discussions, and real-world use case walkthroughs rather than hands-on labs.

What role does Vertex AI play in drug discovery?

Vertex AI provides a scalable MLOps platform that supports reproducible AI workflows, model development, and deployment for scientific research.

Will I receive a certificate?

Yes. A CloudThat Course Completion Certificate will be awarded upon successful completion of the course.