

**Title:** AWS Infrastructure with Terraform Lab

**Duration:** 40 hours

**Lecturers:** Josh Cook and Kevin Coyle

**Delivery:** Live Online

<https://ctme.caltech.edu/educator/cook-joshua/>

<https://ctme.caltech.edu/educator/coyle-kevin/>

**Description:**

This hands-on, project-based learning lab focuses on building practical cloud infrastructure using AWS services and Infrastructure as Code with Terraform. Participants will engage in building real-world projects that integrate core AWS services such as EC2, S3, Lambda, and ECS. The course design moves away from traditional lectures towards an active learning approach, allowing participants to work on increasingly complex infrastructure projects that mirror real-world scenarios, and then immediately apply new software patterns at work.

**Target Audience:**

This course is ideal for IT professionals aiming to specialize in cloud infrastructure, software engineers planning to deploy scalable applications on AWS, and systems architects who want hands-on experience with Infrastructure as Code using Terraform. Participants will engage in a hands-on, project-based learning environment that mimics real-world challenges, making it especially suitable for those looking to advance their skills in cloud architecture and management effectively.

**Learning Objectives:**

By completing this course, you will learn to:

- Design scalable and robust cloud infrastructures using AWS technologies
- Automate and manage cloud resources efficiently using Terraform scripts
- Develop and deploy serverless applications with AWS Lambda
- Manage container orchestration for applications using Amazon ECS
- Implement secure, efficient, and cost-effective cloud storage solutions with Amazon S3

**Topics:**

- Cloud Infrastructure Design: Implement scalable architectures using AWS EC2, S3, Lambda, and ECS
- Infrastructure as Code: Write and manage Terraform scripts for AWS resource provisioning
- Serverless Application Development: Utilize AWS Lambda for serverless applications, integrating seamlessly with other AWS services
- Containerized Applications: Deploy and manage container orchestration using Amazon ECS
- Cloud Storage Solutions: Implement & manage cloud storage with AWS S3, including data lifecycle policies

**Training Delivery:**

Delivered over 5 eight-hour sessions, participants will learn remotely from Caltech AWS experts who have successfully implemented similar solutions for some of the world's leading companies in the field. This flexible training format ensures that participants can engage with the material conveniently and effectively, benefiting from the instructors' expertise and real-world experience.