Caltech | Center for Technology & Management Education

Post Graduate Program in DevOps

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About the Program

Accelerate your career with this acclaimed Post Graduate Program in DevOps, in collaboration with Caltech CTME. This program features the perfect mix of theory, case studies, and extensive hands-on practice to prepare you for a fast-growing field that bridges the gap between software developers and operations.

This Post Graduate Program, designed for graduates in any discipline and experienced professionals from programming and non-programming backgrounds, offers a blend of self-paced videos, live virtual classes, hands-on projects, and labs. Students also have access to mentorship sessions, providing a high-engagement learning experience and real-world applications to help master essential DevOps skills. Students also will get hands-on experience in continuous deployment using current configuration management tools like Puppet, SaltStack, and Ansible.

At the end of this course, learners will be able to write and master front-end deployment and back-end codes and manage hosts for both monitoring and scaling. This program will enable students to demonstrate their knowledge automating workflow and getting products to market more efficiently and effectively with tools such as Ansible, Jenkins, Puppet, Chef, and SaltStack. Learners will also get practical experience with the development and operational activities of teams, continuous code releases, integration, and deployment processes.

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Key Features of the Post Graduate Program in DevOps in collaboration with Caltech CTME

Receive 25 CEUs from Caltech CTME upon course completion

40+ in-demand skills & 15+ tools

250+ hours of Applied Learning

50+ hours of self-paced learning course content

20+ real life projects on integrated labs

Master Classes with Caltech CTME instructor

Caltech CTME Circle Membership

Physical Certificate from Caltech CTME (on request)

Online Convocation by Caltech Program Director

About the Post Graduate Program in DevOps in Collaboration with Caltech CTME

Founded in 1891, Caltech is a world-renowned science and engineering Institute that marshals some of the world's brightest minds and most innovative tools to address fundamental scientific questions and pressing societal challenges. Caltech prizes excellence and ambition. The contributions of Caltech's faculty and alumni have earned national and international recognition, including 38 Nobel Prizes and nearly 60 National Medals of Science. The Institute manages the Jet Propulsion Laboratory (JPL) for NASA.

CTME is embedded in Caltech's Division of Engineering and Applied Science. Caltech CTME has a unique role to play in applying the capabilities of scientists and engineers to the challenges of today's technology-driven businesses. This program applies executive education and professional development directly to real-world problems. Our experts teach the tools and perspectives that elevate careers and help companies achieve their goals.

Upon completing this program, you will receive:

- Caltech CTME Post Graduate Certification
- Caltech CTME Bonafide Certificate
- Individual course completion certificate for all the courses in learning path from Simplilearn
- Program Performance report for the entire learning path in the program
- Receive 25 CEUs from Caltech CTME upon course completion
- Caltech CTME Circle Membership
- Physical Certificate from Caltech CTME (on request)

About Simplilearn

Simplilearn is the world's #1 online bootcamp provider that enables learners through rigorous and highly specialized training. We focus on emerging technologies and processes that are transforming the digital world, at a fraction of the cost and time as traditional approaches. Over one million professionals and 2000 corporate training organizations have harnessed our award-winning programs to achieve their career and business goals.

Program Eligibility Criteria and Application Process

Those wishing to enroll in the Post Graduate Program in DevOps in collaboration with Caltech CTME will be required to apply for admission.

Eligibility Criteria

For admission to this Post Graduate Program in DevOps, candidates:

- Should have a bachelor's degree in any discipline with an average of 50% or higher marks
- With a non-programming background can also apply
- Having prior work experience is not mandatory

Application Process

The application process consists of three simple steps. An offer of admission will be made to the selected candidates and accepted by the candidates upon payment of the admission fee.

STEP 1

Submit an Application

Complete the application and include a brief statement of purpose to tell our admissions counselors why you're interested and qualified for this Post Graduate Program in DevOps.

STEP 2

Application Review

After you submit your application, a panel of admissions counselors will review your application and statement of purpose to determine your qualifications and interest in the program.

STEP 3

Admission

An offer of admission will be made to qualified candidates. You can accept this offer by paying the program fee.

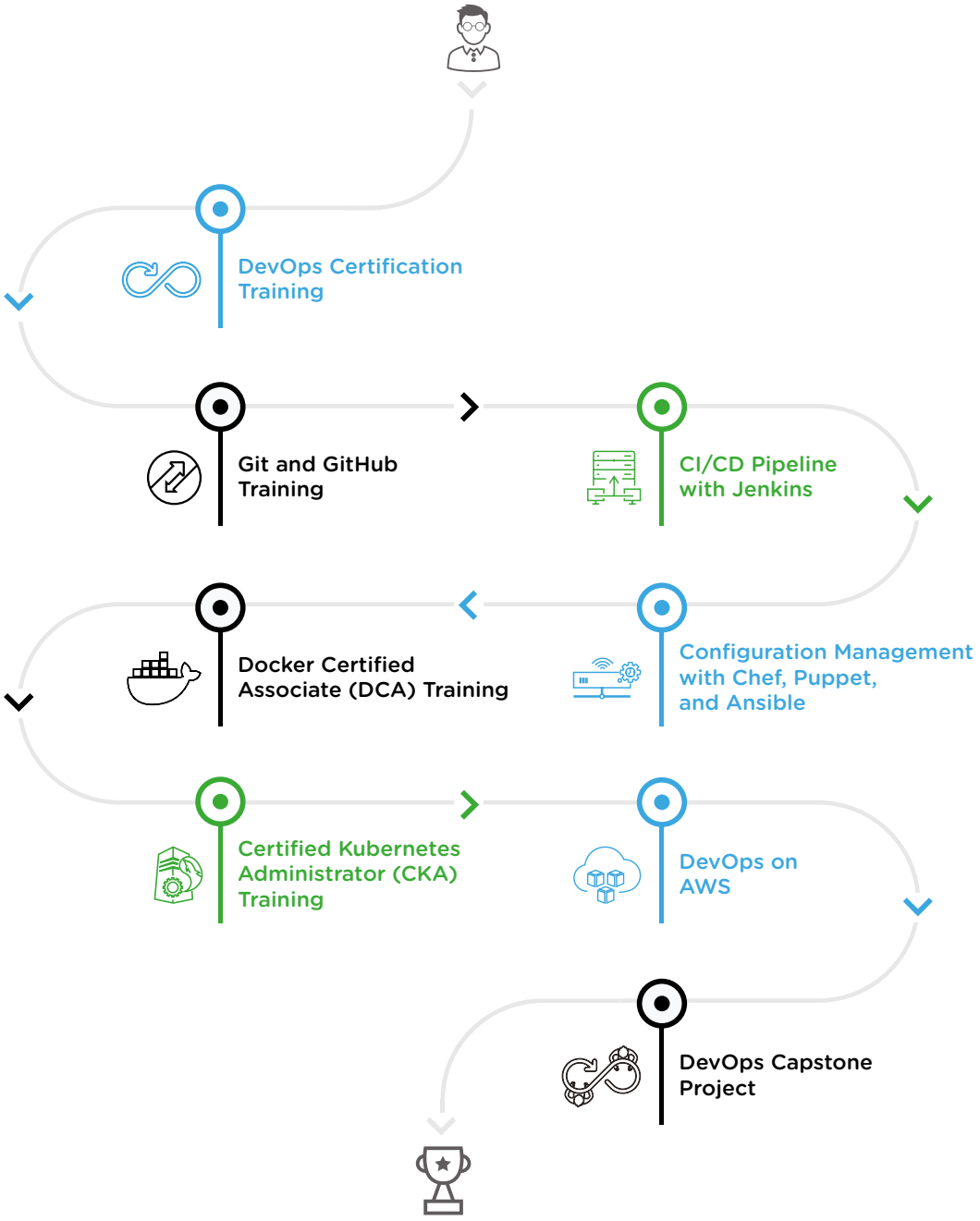
Talk to an Admissions Counselor

We have a team of dedicated admissions counselors who are here to help guide you in the application process and related matters.

They are available to:

- Address questions related to the application
- Assist with financial aid (if required)
- Help you better understand the program and answer your questions

Learning Path



Program Outcomes

At the end of this Post Graduate Program, you will:

Understand the fundamentals of DevOps engineering and be fully proficient with DevOps terminologies, concepts, benefits, and deployment options to meet your business requirements

Be able to deliver change requests from customers rapidly and effectively by adding new (and updating existing) features

Obtain complete knowledge of the “version control system” to effectively track changes augmented with Git and Github training

Develop a sound understanding of security and performance testing to safeguard releases from vulnerabilities

Have a detailed overview of continuous integration and container ecosystem by learning tools such as Jenkins and Docker

Who Should Enroll in this Program?

This program caters to those who are hoping to enter the world of DevOps or want to update their skills, as it is designed and structured to accommodate various professional backgrounds. Although there are no prerequisites for taking this training program, individuals in the following roles and disciplines are ideal for this course:

- Fresh graduates who intend to take the plunge into the DevOps job market
- Professionals with less than two years of experience who are working in either technical or non-technical job roles and wish to build successful careers in the DevOps world
- People working in the following roles will benefit the most from the Post Graduate Program in DevOps:
  - IT team leaders
  - Software developers
  - Systems administrators and IT managers
  - Cloud engineers
  - Developers
  - Engineers

DevOps Certification Training

STEP 1 2 3 4 5 6 7 8

Simplilearn's DevOps practitioner course is designed to prepare you for future successful software development projects. This training has been designed to follow best practices for software development and to make the most efficient use of software tools. This course follows the entire software development lifecycle from requirements analysis through coding and production support.

Key Learning Objectives

- Integrate and deploy tools like Jenkins, TeamCity, and Maven
- Configure management tools Puppet, Chef, Ansible, and Saltstack
- Understand DevOps tools on the cloud
- Build and deploy containerization using Docker
- Perform tuning and monitoring using Nagios

Course curriculum

- Lesson 0 - Course Introduction
- Lesson 1 -Introduction to DevOps
- Lesson 2 -Version Control Systems
- Lesson 3 -Continuous Integration, Continuous Deployment, and Build Tools
- Lesson 4 -Software and Automation Testing Frameworks
- Lesson 5 -Configuration Management Tools
- Lesson 6 -Containerization with Docker
- Lesson 7 -Continuous Monitoring
- Lesson 8 -Need of Cloud in DevOps
- Lesson 9 -Practice Projects

Git and GitHub Training

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Simplilearn's Git and GitHub training program will help you understand software version control and its hosting services. This course is designed to provide expertise in Git tools and help you comprehend the difference between Git and GitHub. You will learn how these tools are used in software development operations, including essential concepts such as remote repositories, branching, merging, using Git in IDE, and Git workflows.

Key Learning Objectives

- Create and fork repositories in GitHub
- Apply branching and merging concepts in your projects
- Implement different Git workflow strategies in real-time scenarios
- Deploy branching, merging, and rebasing in Git
- Work on Git with BitBucket using cloud
- Understand Git operation in Eclipse ID

Course curriculum

- Lesson 01 - Course Introduction
- Lesson 02 - Git Basic
- Lesson 03 - Getting Started with Git
- Lesson 04 - Remote Repositories
- Lesson 05 - Branching, Merging, and Rebasing in Git
- Lesson 06 - BitBucket and GitLab
- Lesson 07 - GitPlugin with IDE

CI/CD Pipeline with Jenkins

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This CI/CD Pipelines with Jenkins Certification Training course will help you learn about server automation, continuous integration, building pipelines and configuration tools, automated testing and code quality improvement, and distributed systems in Jenkins through intensive, hands-on practice assignments.

Key Learning Objectives

- Build a continuous integration/continuous deployment (CI/CD) pipeline
- Design an automated deployment pipeline
- Build jobs and configurations in Jenkins
- Configure and run builds in Jenkins from GitHub
- Perform integration testing with Jenkins
- Configure and build tools and plugins using Github

Course curriculum

- Lesson 01 - Course Introduction
- Lesson 2 - Introduction to CI/CD
- Lesson 3 - Getting Started with Jenkins
- Lesson 4 - Build Jobs and Configurations
- Lesson 5 - Configuring Build Pipelines
- Lesson 6 - Automated Testing In Jenkins
- Lesson 7 - Code Quality Improvement Using Jenkins
- Lesson 8 - Automated Deployment and Continuous Delivery
- Lesson 9 - Distributed System in Jenkins

Configuration Management with Chef, Puppet, and Ansible

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Configuration management is one of the most important stages in the DevOps pipeline. This course provides an in-depth understanding of the concepts of Chef, Puppet, and Ansible. The DevOps lifecycle is a collection of engineering practices providing a systematic way to manage all of the entities required for efficient deployment. These entities include the code, the infrastructure, and the people who take care of the infrastructure.

Key Learning Objectives

- Gain an in-depth understanding of the concept of configuration management
- Work on the three main tools: Chef, Puppet, and Ansible
- Understand the benefits of configuration management and infrastructure as code
- Understand the automation skills to scale your infrastructure

Course curriculum

- Lesson 01 - Course Introduction
- Lesson 2: Introduction to Configuration Management
- Lesson 3: Chef Fundamentals
- Lesson 4: Chef Cookbooks and Recipes
- Lesson 5: Advanced Chef
- Lesson 6: Getting started with Puppet
- Lesson 7: Puppet Resources, Classes, and Modules
- Lesson 8: Puppet Hiera, Forge, and Puppet Best Practises
- Lesson 9: Ansible Basics
- Lesson 10: Ansible Implementation
- Lesson 11: Ansible on Cloud with Terraform

Docker Certified Associate

STEP 5

This training course is aligned with the Docker Certified Associate (DCA) Certification body and covers the concepts of Docker at a deep level. You will be able to comprehend Docker and its role in the DevOps lifecycle; create images, containers, swarms, volumes, and networks; define Docker security client bundles and client-server authentication; and more.

Key Learning Objectives

- Understand the basics and features of Docker
- Run a Docker container and image creation management
- Understand tools that support Docker to ease application deployment, continuous integration, service discovery, and orchestration
- Understand Docker networking models and use cases
- Install and uninstall Docker Enterprise
- Discuss Docker security in detail using Demons

Course curriculum

- Lesson 01 - Course Introduction
- Lesson 2 - Introduction to Docker
- Lesson 3 - Image Creation, Management, and Registry
- Lesson 4 - Orchestration
- Lesson 5 - Networking
- Lesson 6 - Installation and Configuration of Docker Enterprise
- Lesson 7 - Security

Certified Kubernetes Administrator

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Kubernetes is one of the most popular container orchestration tools available. The Kubernetes Administrator certification course, founded by the Cloud Native Computing Foundation (CNCF), will enhance your Kubernetes skills and give you credibility in the field while preparing you for the CKA exam.

Key Learning Objectives

- Understand Kubernetes core concepts and terminologies
- Install and deploy Kubernetes cluster
- Understand pods and scheduling techniques
- Perform logging, monitoring, services, and volumes in Kubernetes
- Troubleshoot application and network failures
- Perform auditing and logging the cluster events

Course curriculum

- Lesson 01 - Introduction
- Lesson 02 Kubernetes Overview
- Lesson 03 Setup Kubernetes
- Lesson 04 Kubernetes Concepts
- Lesson 05 YAML Introduction
- Lesson 06 Kubernetes Concepts - PODs, ReplicaSets, Deployments
- Lesson 07 Networking in Kubernetes
- Lesson 08 Services
- Lesson 09 Microservices Architecture
- Lesson 10 Conclusion

DevOps on AWS

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Simplilearn's DevOps on AWS course is structured to build your understanding of both technologies using the advanced skills on CodeBuild, CodeDeploy, and CodePipeline to automate continuous delivery and continuous integration for your application.

Key Learning Objectives

- Set up the DevOps infrastructure on the cloud
- Work and set up IDE on Cloud9
- Deploy projects on AWS using CodeBuild, CodeDeploy, and CodePipeline
- Work on AWS CodeStar with complete deployment

Course curriculum

- Lesson 01 - Getting Started with DevOps on AWS Cloud
- Lesson 02 - Spinning Up an IDE in AWS Cloud with Cloud9
- Lesson 03 - Building Applications with AWS CodeBuild
- Lesson 04 - Deploying Applications with AWS CodeDeploy
- Lesson 05 - Automating Deployment with AWS CodePipeline
- Lesson 06 - DevOps with AWS CodeStar

Capstone Project

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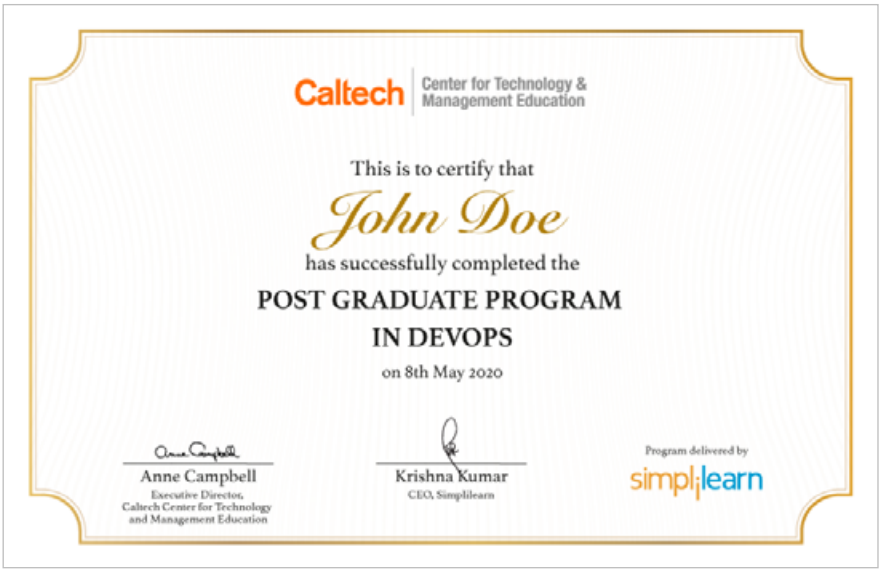
This DevOps capstone project will give you an opportunity to implement the skills you learned throughout this program. Through dedicated mentoring sessions, you'll learn how to solve a real-world, industry-aligned problem. This project is the final step in the learning path and will enable you to showcase your expertise in DevOps to future employers.

Academic Master Classes

– Caltech CTME

Attend an online interactive masterclass conducted by the instructor from the Caltech CTME and get insights about advancements in the DevOps domain and understand why it has become important for any organization to understand and implement DevOps to scale up.

Certificate



Upon completion of this Post Graduate Program in DevOps you will receive the Post Graduate Certification from Caltech CTME. You will also receive certificates from Simplilearn for the courses in the learning path. These certificates will testify to your skills as an expert in DevOps.

Advisory Board Member

Rick Hefner, Ph.D.

Program Director, Caltech Center for Technology & Management Education

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Dr. Rick Hefner serves as the Program Director for Caltech's Center for Technology and Management Education, where he develops customized training programs for technology-driven organizations. He has over 40 years of experience in systems development and has served in academic, industrial, and research positions. His interests include systems engineering, project management, and organizational change.

Dr. Hefner has worked with companies in the aerospace, communications, electronics, and health sciences industries: including AeroVironment, Applied Physics Laboratory, Applied Materials, Ares Management, Boeing, DRS Technologies, Halliburton, Herbalife, Honeywell, Jet Propulsion Laboratory, John Deere, L-3 WESCAM, Maytag, Motorola, Northrop Grumman, Pacific Bell, Raytheon, Schlumberger, Southern California Edison, St. Jude Medical, The Aerospace Corporation, Toshiba, TRW, U.S. Navy, and Xerox.

Dr. Hefner is credited with over 200 publications and presentations. He received his MS and BS from Purdue University in interdisciplinary engineering and his Ph.D. from the University of California, Los Angeles, in applied dynamic systems control.

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