

Caltech

Center for Technology &
Management Education

Blockchain Bootcamp



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Program Overview

Accelerate your career with the acclaimed Caltech Blockchain Bootcamp, delivered in collaboration with Caltech CTME. This program features the perfect mix of theory and extensive hands-on practice to master blockchain concepts and tools. It provides a comprehensive training on blockchain while leveraging Caltech's academic excellence

Designed for working professionals, this bootcamp provides a deep-dive into blockchain through a blend of online self-paced videos, live virtual classes, hands-on projects, and integrated labs — with mentorship sessions to provide a high-engagement learning experience.

This program offers in-depth exposure to technologies including Bitcoin, Hyperledger, Solidity, Multichain, Ethereum, Truffle, and Java to prepare you for an exciting career in blockchain.



About Caltech

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. Caltech CTME applies executive education and professional development directly to real-world problems. Caltech CTME experts teach the tools and perspectives that elevate careers and help companies achieve their goals



Key Features of the Program



Caltech CTME program completion certificate



Industry-relevant hands-on projects



Earn up to 15 CEUs from Caltech CTME



Seamless access to integrated labs



Masterclasses delivered by distinguished Caltech instructor.



Capstone projects



Caltech CTME Circle Membership



Simplilearn's Career Assistance to help you get noticed by top hiring companies



Online convocation by Caltech CTME Program Director



8X higher interaction in live online classes by industry experts

Eligibility Criteria

For admission to this Blockchain Certification Program, candidates must have:

- ✔ Basic understanding of Java is preferred
- ✔ At least 18 years and have a High School Diploma or equivalent
- ✔ Basic understanding of mathematics



Application Process

Candidates can apply to the Caltech Blockchain Bootcamp in 3 simple steps:



Submit an Application

Complete the application and include a brief statement of purpose. The latter informs our admissions counselors why you're interested and whether you're qualified for the bootcamp.



Application Review

A panel of admissions counselors will review your application and statement of purpose to determine whether you qualify for acceptance.



Admission

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

Qualified candidates can accept the offer by paying the program fee

Talk to an Admissions Counselor

We have a team of dedicated admissions counselors 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

Who is this Bootcamp Ideal for?

This program caters to graduates in any discipline and working professionals from diverse backgrounds. Basic programming knowledge is also good to have. The diversity of our students add richness to class discussions and interactions.

The blockchain market is expected to reach USD 39.7 billion by 2025, at a growth rate of 67.3 percent. This program prepares both new and experienced professionals with a passion for blockchain and a technical background for a thriving career in blockchain. Suitable candidates include:

- ✔ Full Stack Developers
- ✔ Software Developers
- ✔ Front-end Web Developers
- ✔ Back-end Web Developers
- ✔ Application Development Managers
- ✔ Technical Project Managers
- ✔ QA and Test Engineers

Program Outcomes



Understand blockchain technology and key concepts such as cryptography and cryptocurrency concepts



Learn about consensus, transactions, workflows, and networks



Get a deeper understanding of Bitcoin and its network



Understand and learn about smart contracts



Understand what distributed ledger and hyperledger means



Get hands-on experience with a capstone on industry-relevant use cases



Architect and develop applications on Ethereum

Learning Path



Fundamentals of Blockchain

Module

1

2

Module Curriculum

Introduction to Blockchain

- ✔ Challenges Faced by Modern Businesses
- ✔ What is Blockchain?
- ✔ Building Blocks of Blockchain
- ✔ Types of Blockchain

Blockchain Pillars

- ✔ Introduction to Blockchain Pillars
- ✔ Cryptography
- ✔ Consensus
- ✔ Distributed Ledger

Bitcoin Blockchain

- ✔ Introduction to Bitcoin
- ✔ Bitcoin Wallets
- ✔ Bitcoin Block
- ✔ Bitcoin Transaction
- ✔ Bitcoin Scripts
- ✔ Bitcoin Attacks
- ✔ Bitcoin Network
- ✔ Bitcoin Mining

Ethereum Blockchain

- ✔ Introduction to Ethereum
- ✔ Swarm and Whisper
- ✔ Remix IDE
- ✔ Truffle Framework
- ✔ Ethereum Networks
- ✔ Ethereum Wallets
- ✔ Ethereum Clients
- ✔ Web3.js
- ✔ NFTs

Enterprises Blockchains

- ✔ Enterprise Blockchain
- ✔ Hyperledger
- ✔ Hyperledger Sawtooth
- ✔ Hyperledger Iroha
- ✔ Hyperledger Indy
- ✔ Hyperledger Burrows
- ✔ Hyperledger Fabric
- ✔ Hyperledger Fabric Transaction
- ✔ Fabric Network
- ✔ Fabric Network Type
- ✔ Fabric Explorer
- ✔ Node.js
- ✔ R3 Corda
- ✔ Corda Network

Blockchain Application and Architecture

Module

1

2

Module Curriculum:

Ethereum Smart Contracts

- ✔ Smart Contract Lifecycle
- ✔ Solidity
- ✔ Solidity Variables
- ✔ Solidity Compilation and Deployment
- ✔ Solidity Functions
- ✔ Truffle
- ✔ Security Consideration
- ✔ Web3

Hyperledger Fabric Chaincode

- ✔ Chaincode
- ✔ Gradle
- ✔ Chaincode Java API
- ✔ Chaincode Development
- ✔ Chaincode Package, Install, Approve

Hyperledger Fabric SDK

- ✔ Fabric SDK Introduction
- ✔ Node SDK

Multichain

- ✓ Introduction to Multichain
- ✓ Multichain Installation
- ✓ Create a Multichain Instance
- ✓ Multichain Assets
- ✓ Multichain Streams
- ✓ Multichain Consensus
- ✓ Multichain API

IOTA and Blockchain Use Cases

- ✓ Introduction to IOTA
- ✓ Traditional Blockchain Challenges
- ✓ Healthcare Use Cases
- ✓ Government Use Cases
- ✓ Finance Use Cases
- ✓ Supply Chain Use Cases

Certificates



Upon successful completion of the Caltech Blockchain Bootcamp, you will receive a certificate of completion from Caltech CTME.

Advisory Board Members



Rick Hefner, Ph.D.

Program Director, Caltech Center for Technology & Management Education

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Rick Hefner, PhD, specializes in systems development and maintenance; project management; Lean Six Sigma; process improvement, technology transfer; and risk management. His experience spans over 35 years. Dr. Hefner recently served as Director of Process Management at Northrop Grumman Corporation, where he managed corporate process initiatives related to Lean Six Sigma and program management.

Previous positions at Northrop Grumman (formerly TRW) included managing technology process initiatives and helping to establish the corporate engineering and program management processes. Previously, at Aerospace Corporation, Dr. Hefner was the Director of their Software Development department. He served as an engineer, technical specialist, project manager, and section manager.

Dr. Hefner has also worked with companies in the communications, electronics, and health sciences industries, including Applied Physics Laboratory, Ares Management, Boeing, DRS Technologies, Herbalife, Honeywell, Jet Propulsion Laboratory, John Deere, L-3 WESCAM, Maytag, Motorola, Pacific Bell, Raytheon, Schlumberger, Southern California Edison, St. Jude Medical, Toshiba, U.S. Navy, and Xerox. Dr. Hefner is credited with over 200 publications and presentations. He earned his PhD from the University of California, Los Angeles, in applied dynamic systems control. He received his MS and BS from Purdue University in interdisciplinary engineering.



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Disclaimer: All programs are offered on a non-credit basis and are not transferable to a degree.