Cardano Academy

Cardano Blockchain Certified Associate (CBCA) Course Overview

CARDANO
Academy

Overview

This course covers the fundamentals of blockchain and introduces the key concepts and terminology. This course contains four modules:

Course	**Cardano Blockchain Certified Associate (CBCA)**
Modules	**Module 1:** Introduction to Blockchain (9 units) **Module 2:** Advanced Blockchain Concepts (7 units) **Module 3:** Cardano Blockchain (8 units) **Module 4:** Getting Started with Cardano (5 units)

Module 1

Module 1 introduces the foundation of blockchain, from the main components of a typical blockchain network, to how consensus algorithms provide a mechanism to reach agreement in decentralised systems. It delves into the Byzantine Generals Problem and explains what Byzantine and Practical Byzantine fault tolerant systems are. This module looks at the key concepts behind proof of work and proof of stake systems, including their respective limitations. Other proof-based consensus models including proof of authority, proof of Importance and proof of History are briefly explored. Encryption methods are examined and how hash functions and digital signatures provide data authenticity and integrity.

Module 2

Module 2 builds on the concepts introduced in module 1. It defines the transactions models used in blockchain, including account-based, Unspent Transaction Output and extended Unspent Transaction Output. It examines the content of a block and the role of the block producer. Module 2 also explains how the risks against double-spending and Sybil attacks are mitigated, the causes of soft and hard forks and the importance of incentive mechanisms. It concludes with a look at layer 1 and layer 2 scaling solutions.

Module 3

Module 3 focuses on Cardano blockchain, it describes Cardano's genesis and genesis entities, and the mission and principles governing Cardano. It looks at the Cardano node and how the eras have developed and enhanced features of the network. Ouroboros, Cardano's consensus algorithm, is examined, along with the reward and incentive mechanism of Cardano. The governance process including Cardano Improvement Proposals is explained, along with the role of the Cardano Community.

Module 4

Module 4 looks at how to get started buying, storing and transferring ada. It also examines how staking works on Cardano with the staking lifecycle, along with the role of stake pools and stake pool operators. It describes how to create and transfer both native assets and non-fungible tokens and concludes with a look at decentralised applications and exchanges.

Post-course activity

The **Cardano Blockchain Certified Associate (CBCA)** course is a prerequisite to the other courses in the learning track - **Cardano Blockchain Certified Professional (CBCP)** and **Cardano Blockchain Certified Expert (CBCE)** unless you have the equivalent knowledge.

The Cardano Foundation is pleased to announce that for the CBCA course, you will soon have the opportunity to obtain the Associate Certification. The examination bookings will be made available in the first half of 2024.

Who should attend

- General public interested in blockchain, and in working with blockchain in the future.
- Business Professionals, decision-makers, entrepreneurs who want to learn more about blockchain for their businesses
- Lecturers, researchers, teachers, and trainers who want to understand the fundamentals of blockchain and/or teach the course material.
- Students who are interested in learning about or working in the blockchain industry.
- Traditional web2 IT professionals wanting to learn about blockchain and upskill in web3.
- Blockchain developers and engineers who will develop and build on the Cardano Blockchain.

Format available

This course is available as a self-paced e-learning experience.

Prerequisites

No prior knowledge or experience of blockchain is needed.

Course Outline

Module 1

1. General Introduction and Background
2. What is Blockchain
3. Blockchain Generations
4. Public Key Encryption
5. Hash Functions
6. Digital Signatures
7. Practical Byzantine Fault Tolerance
8. Proof of stake and Proof of work
9. Other approaches of consensus

Module 2

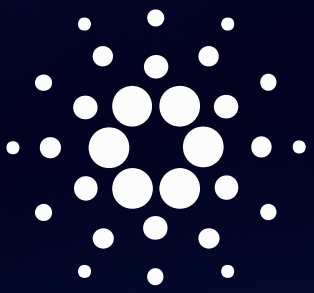
1. Transaction Models
2. Chain Features
3. Double-spending Attack
4. Block Rewards and Transaction Fees
5. Web3 Architecture
6. Scalability: layer 1 solutions
7. Scalability: layer 2 solutions

Module 3

1. Cardano Genesis
2. Cardano Architecture
3. Ouroboros Consensus Algorithms
4. Reward Mechanisms
5. Addresses
6. Programming the Cardano Blockchain
7. Cardano Community
8. Cardano Improvement Proposals (CIPs)

Module 4

1. Builder Ecosystem Overview
2. Buying, storing, transfering ADA
3. Staking on Cardano
4. Creating and transferring native assets
5. Decentralised Applications (DApps) and Decentralised Exchanges (DEX)



CARDANO
Academy