



CARDANO ACADEMY

Agentic Coding on Cardano
Course Overview

Overview

Smart contract development has changed. The bottleneck is no longer typing syntax — it is specifying intent, directing an AI coding agent, and auditing what it produces. Agentic Coding on Cardano equips developers to build on Cardano in exactly this new way of working. This beginner-to-intermediate program introduces the eUTxO (extended Unspent Transaction Output) model — the cornerstone of Cardano’s uniquely deterministic architecture — and contrasts it with the account-based model used by other blockchains. It then teaches the full agentic loop: intent, spec, generate, audit, verify, using the `cardano-dev-skills` toolkit and the Cardano Developer Portal. The second half is a hands-on journey through Cardano’s eras, where every stop ends with a real transaction you submit to the chain — your era stamp — culminating in a single on-chain portfolio and a verifiable course credential.

Course	Agentic Coding on Cardano
Track	Technical (Developer Track) · part of the Cardano Academy certification path (CBCA → Agentic Coding → CBCP)
Format	Free, self-paced, on-demand e-learning with hands-on on-chain exercises and a final practicum submission
Audience	Developers new to Web3; developers transitioning from other blockchains; existing Cardano developers seeking a refresher for the agentic era
Duration	16 units · 63 short video lessons · ~4 hours total, including quizzes and on-chain exercises, at your own pace
Outcome	A verifiable course credential issued by the Cardano Academy, plus a seven-stamp on-chain transaction portfolio anyone can independently verify

Why This Course Matters

Most blockchain courses stop at theory, and most coding courses ignore how developers actually build in 2026: with AI agents generating the majority of code. That combination creates a dangerous gap — developers who can prompt an agent but cannot judge whether the validator it produced is safe.

This course closes that gap on the chain best suited to it. Cardano's deterministic eUTxO design means fees can be predicted before submission, failed transactions cost nothing, and whole classes of attacks that plague account-based chains simply do not exist by design — properties that make agent-generated code uniquely auditable and verifiable. You will learn to direct an agent, audit its output against a published 26-item vulnerability checklist, and prove every result with a real on-chain transaction.

The course also serves as the foundation for the “Building on Cardano” domain of the Cardano Blockchain Certified Professional (CBCP) exam, making it a key step in the Academy's professional certification track and its mission to onboard the next generation of builders into the Cardano ecosystem.

Key Takeaways

In this program, you will:

- **Gain a comprehensive understanding of the eUTxO model** and its advantages over account-based systems — determinism, transaction chaining, parallelism, and predictable fees.
- **Explain the typical architecture of a Cardano dApp**, including on-chain validators and the off-chain half: SDKs, data providers, and wallets.
- **Describe the evolution of smart contract platforms**, from Bitcoin Script and Solidity through Plutus to Aiken, the modern smart contract language for Cardano.
- **Direct an AI coding agent through the full loop** — intent, spec, generate, audit, verify — using the cardano-dev-skills toolkit, and audit generated validators against the 26-item eUTxO vulnerability checklist.
- **Submit real transactions on the Cardano pre-production network**: predict a fee exactly, delegate stake, mint your own native asset, deploy an audited validator, chain and parallelise transactions, cast a governance vote, and ship a working dApp with the Evolution SDK.
- **Outline the next steps for your professional journey** — from the maintained references and community channels to the ecosystem funding ladder your on-chain portfolio unlocks.

Who Is This Program For?

This course is designed for individuals who wish to move beyond a surface-level understanding of blockchain and delve into the technical mechanics of building on Cardano in the agentic era. Representative roles include:

- **Developers new to Web3** who are looking to take their first steps into blockchain development with a modern, agent-first workflow.
- **Developers from other blockchains** who are familiar with account-based models (such as Ethereum) but unfamiliar with eUTxO reasoning and Cardano's toolchain.
- **Existing Cardano developers** who want to use the course as a recap and to adopt the current tooling — Aiken GA, the Evolution SDK, and cardano-dev-skills.
- **Anyone who completed the Cardano Blockchain Certified Associate (CBCA)** and is looking to further their knowledge on the path toward professional certification (CBCP).
- **Technical leads and architects** interested in the foundations of Cardano's protocol, its deterministic design, and what agent-assisted development means for their teams.

Your Learning Journey

During this online journey, you will explore the practical mechanics of building on Cardano with AI coding agents through learning methods designed with you in mind. The course is delivered as free, self-paced, on-demand e-learning: the first half combines animated explainers with concise theory lessons and knowledge-check quizzes, while the second half features live screen recordings of your instructor running the actual agent prompts end-to-end, so you see the real workflow — not an idealised one. Every era unit ends with a hands-on exercise on the Cardano pre-production network, where transactions cost nothing and mistakes are free.

As you progress you gather your evidence — specs, audit notes, and transaction ids — into a single record, and a final gathering transaction assembles all seven era stamps into one on-chain portfolio. Submit your record to the Academy's applied environment — with simple social login and no wallet or cryptocurrency required — and receive your verifiable course credential.

Program Modules



Unit 1: Introduction & Recap

Sets the stage for the course, recapping key concepts from CBCA. Introduces the Cardano stack, the basics of UTxO vs account-based models, and the core terms of smart contract development.



Unit 2: Intro to UTxO and the Account Model

Dives into the origins of the dominant ledger models. Explores Bitcoin's UTxO design and Bitcoin Script, their strengths and limits, then transitions to Ethereum's account-based model, global state, and Solidity.



Unit 3: UTxO vs Account Model Deep Dive

An in-depth, research-driven comparison of the two models — how each handles state transitions, sharding, storage, and privacy — and how Cardano's research-first strategy shaped its ledger.



Unit 4: eUTxO — the Extended UTxO Model

Focuses on Cardano's key innovation. Breaks down addresses, datums and redeemers, validator handlers, the transaction validation process, and native assets — tokens without token contracts.



Unit 5: eUTxO and Cardano in Practice

Explores the practical implications of the model for the ecosystem: scaling by design, Hydra, Babel fees, Ouroboros Leios and Peras, Layer 2 rollups, wallet security, and DeFi on eUTxO vs account-based chains.



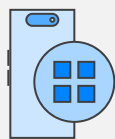
Unit 6: Haskell, Plutus and Aiken

Covers the languages of Cardano development: Plutus and Plutus Core, the ledger eras, and Aiken — the modern, developer-friendly smart contract platform this course builds on.



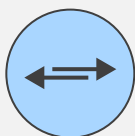
Unit 7: Getting Started with Aiken

A hands-on setup unit: install the toolchain, create your first project, and read Aiken at a glance — enough to reason about the code your agent will generate.



Unit 8: The Agentic Workflow

The pivot of the course. Covers the off-chain half of every dApp, the shift to programming by intent, and your toolkit: cardano-dev-skills, grounded in current documentation.



Unit 9: Byron · Genesis — Your First Deterministic Transaction

Predict a transaction fee before you submit it — and watch it hold. Learn why failure is free on Cardano, and earn your first era stamp on the pre-production network.



Unit 10: Shelley · Decentralization You Can Join

Proof of stake, with a proof: understand Ouroboros, then join the network yourself by delegating stake to one of the thousands of pools securing Cardano — non-custodially.



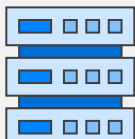
Unit 11: Goguen I · Native Assets

Tokens are ledger citizens on Cardano — no token contract required. Understand why, then mint your own native asset as your era stamp.



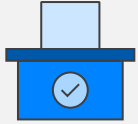
Unit 12: Goguen II · The Audited Validator

The judge takes the bench: specify a validator, direct your agent to generate it, audit it against the vulnerability checklist, then deploy it and lock and unlock funds behind it. Case closed.



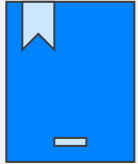
Unit 13: Basho · Scale by Design

Scale is an architecture, not a promise. Chain unconfirmed transactions, run payments in parallel, and work with reference data you don't spend.



Unit 14: Voltaire · Governance

The chain that argues with itself: understand on-chain governance, then have your say — register as a DRep or delegate your voting power, and cast a vote on a real governance action.



Unit 15: The Agentic Era

Bring it all together: build the ten-minute dApp with the Evolution SDK and a CIP-30 wallet, mint the credential another contract can read, and gather all seven era stamps into a single on-chain portfolio transaction in the Cardano Academy Practicum.



Unit 16: Conclusion & Next Steps

A comprehensive recap of the theory-to-practice arc, the maintained references to keep leaning on, and where your course record can take you — from Project Catalyst to the Cardano Foundation's Accelerator Program. Submit your record and claim your credential.

The Cardano Academy Platform Learning Experience

Our programs are designed to meet the needs of individual learning styles while also leveraging the power of expert-verified information. This is achieved through a user-friendly learning platform that enables participants to easily navigate the program content.



On-demand E-learning:

Learn at your own pace, on your own schedule.



Gamified Reinforcement:

Engage with the material through quizzes, achievements, and interactive elements that aid retention.



Mobile Access:

Access your courses anytime, anywhere, on any device.



Open-Source Materials:

Benefit from our commitment to open-source education.

Technical and Business Learning Tracks

Cardano Blockchain Certified Associate (CBCA)

08:30 hrs

4 Modules

Intermediate

Technical

Certified



Available in English and Portuguese



Technical

Staking Rewards and Calculations



Technical

Aiken: Smart Contracts on Cardano



Business

Generative AI and Blockchain

Released Fall 2026

Validate your skills and expertise with digital badges

What Our Learners Say About Our CBCA Certification Course

“

Wow...awesome and interactive lessons.

”

“

The concept was well delivered.

”

“

The course provides me with a deep understanding of hash functions and their critical role in information security.

”

“

I really enjoyed studying the Hard Fork Combinator application.

”

“

I was captivated by the analysis of the story about the Nakamoto coefficient when measuring the decentralization of a blockchain network.

”

“

Very valuable information about Cardano's architecture and operation.

”

“

I fully understand the course and am very excited about these highly technical and in-depth topics...

”

Your Path to Certification

1. Complete the Course & Earn Your Badge



Upon successful completion, the Cardano Foundation grants a **verified digital badge**. This LinkedIn-compliant credential validates your new skills and expertise.

2. Advance to a Certified Associate (CBCA)

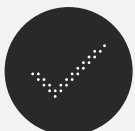
For learners wishing to advance their knowledge, the next step is the Cardano Blockchain Certified Associate (CBCA) exam. This recognized professional certification validates your technical and strategic blockchain knowledge.



Practice Exam and Completion Badge



Certification: \$99,
Online, 90 min., 50 Questions



LinkedIn-Compliant
Credential via Credly



In Partnership with Pearson VUE and Credly

Meet Your Academic Team and Subject Matter Experts

The Academy team is made of Education, Enterprise, and Technical Talent, with 15-20+ years of experience each. We work closely with our subject matter experts to ensure quality, accuracy and relevance.

The Academic Team



Nadia Mannell
Director



Heidi Lynn Staples
PhD, Education
Manager



John Greene
Technical Blockchain
Writer



Niklas Göke
Business Blockchain
Writer

The Subject Matter Experts



Thomas Mayfield
Team Lead -
Decentralized Trust
and Identity Solutions



Michiel Bellen
Core Integrations
Team Lead



Denicio Bute
Community Manager



Matthias Benkort
Technical Director of
Open Source
Development



John Wright
Senior Legal Counsel

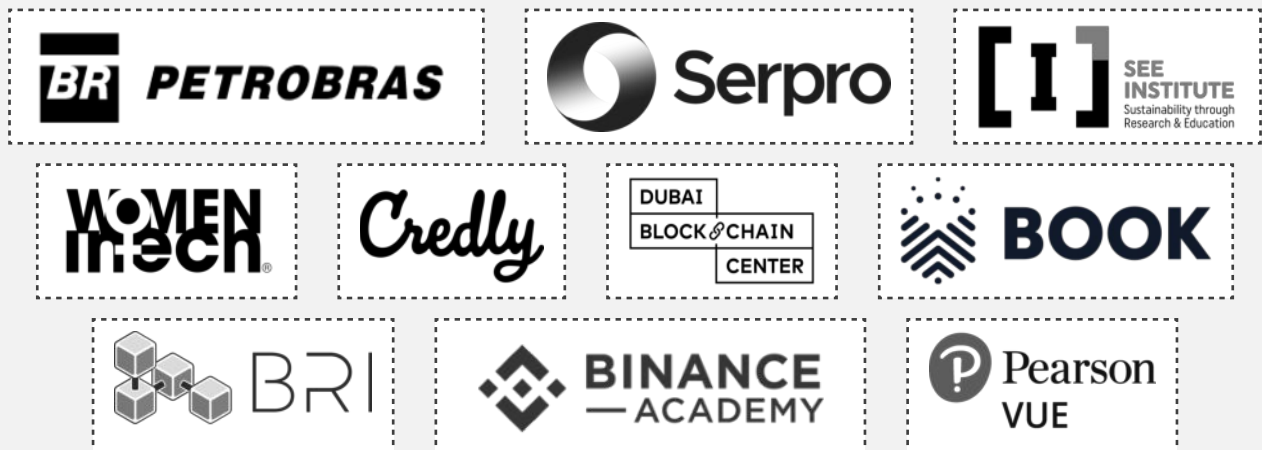


Nicolas Cerny
Governance Lead



Fabian Bormann
Team Lead -
Ecosystem
Engineering

Trusted by Global Partners



10,000+ registered learners

About the Cardano Academy

The Cardano Academy provides **quality-verified, up-to-date blockchain education and enablement**. Our offerings are designed to empower individuals and enterprises with the knowledge and skills needed to succeed in the evolving world of blockchain.

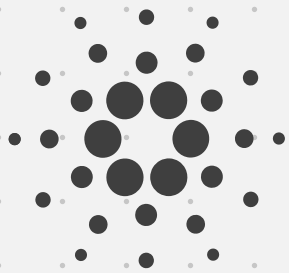
We provide a range of learning opportunities, from self-paced online courses and corporate masterclasses to diploma programs and professional certifications. Our mission is to foster a global community of educated, capable, and innovative contributors to the Cardano ecosystem.

Ready to Begin?

Unlock the power of Cardano and take the next step in your blockchain education.



Register for Free at:
<https://cardanofoundation.org/academy>



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