BLACKBIRD FOR TRAINING

Blockchain and Smart Contract Development

15 – 19 August 2027
Online



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Introduction

In the age of digital transformation, Blockchain technology stands as one of the most disruptive innovations redefining how data, transactions, and trust are managed.

Through its decentralized and tamper-resistant architecture, Blockchain enables secure, transparent, and efficient operations across industries — from finance and logistics to governance and data management.

At the heart of this revolution lies the Smart Contract — a self-executing digital agreement that automates business logic without intermediaries, reducing costs and minimizing human error.

This course equips participants with a comprehensive understanding of Blockchain fundamentals and hands-on experience in designing and developing Smart Contracts using modern development tools and programming frameworks.

Course Objectives

By the end of this course, participants will be able to:

- Understand the foundational principles and architecture of Blockchain technology.
- Analyze how decentralized networks validate and record transactions securely.
- Design and develop Smart Contracts using programming languages such as Solidity.
- Build decentralized applications DApps integrating smart contracts and user interfaces.
- Apply best practices in Blockchain security and testing.
- Interact with Blockchain networks such as Ethereum and Hyperledger.
- Evaluate real-world Blockchain use cases across enterprise sectors.
- Design and implement decentralized solutions for business automation.

Course Outlines

Day 1: Fundamentals of Blockchain Technology

- Introduction to Blockchain evolution and its business impact.
- Understanding blocks, transactions, and distributed ledgers.
- Types of Blockchains: public, private, and permissioned networks.
- Consensus mechanisms and their role in validation.
- Encryption and hashing fundamentals for data security.
- Practical exercise: simulating the creation of a new block.



Day 2: Smart Contract Development

- Understanding the concept and structure of Smart Contracts.
- Introduction to Solidity and development environments.
- Setting up tools such as Remix, Ganache, and Truffle.
- Writing and compiling a simple Smart Contract.
- Deploying and testing contracts on test networks.
- Hands-on exercise: developing a transaction management contract.

Day 3: Building Decentralized Applications DApps

- Core components of a DApp and how it interacts with the Blockchain.
- Connecting user interfaces to Smart Contracts using Web3 frameworks.
- Managing user interactions and wallet integrations.
- Developing front-end interfaces for decentralized systems.
- Deploying DApps on test environments.
- Workshop: building a DApp for digital asset management.

Day 4: Security and Testing of Smart Contracts

- Common vulnerabilities in Smart Contracts and how to mitigate them.
- Security auditing and static code analysis.
- Using tools like MythX, Slither, and Remix Analyzer for validation.
- Addressing reentrancy, overflow, and logic vulnerabilities.
- Implementing secure design and best development practices.
- Practical session: auditing and optimizing an existing Smart Contract.

Day 5: Deployment, Optimization, and Enterprise Applications

- Deploying Smart Contracts on main Blockchain networks e.g., Ethereum.
- Managing updates, versions, and migrations.
- Enterprise applications of Blockchain in finance, logistics, and governance.
- Assessing the business value and ROI of Blockchain implementations.
- Exploring multi-chain and cross-chain interoperability.
- Capstone project: developing a fully functional Blockchain-based solution.



Why Attend this Course: Wins & Losses!

- Gain a deep understanding of Blockchain technology and its applications.
- Acquire hands-on experience in Smart Contract design and implementation.
- Learn to build decentralized applications that improve transparency and trust.
- Integrate Blockchain solutions into enterprise systems securely.
- Strengthen your technical expertise in emerging digital transformation fields.
- Learn to use modern Blockchain development tools and frameworks.
- Develop secure, scalable, and efficient decentralized solutions.
- Build the knowledge base required to innovate within the Web3 ecosystem.

Conclusion

Blockchain and Smart Contract Development is not just a technical discipline — it's the foundation for the next era of digital ecosystems.

Through this course, participants will gain both conceptual understanding and hands-on experience to design, deploy, and maintain decentralized applications that drive transparency, efficiency, and innovation.

Mastering Blockchain technology means more than learning code — it represents the ability to architect secure, trustworthy systems that redefine digital collaboration, automation, and value exchange.

This course provides the skills and confidence to lead the way in the decentralized future of business and technology.

