Shaikh Kamal IT Business Incubator
Chittagong University of Engineering & Technology (CUET)

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Course Outline: Blockchain Developer's Guide

Course by:

Sheikh Kamal IT Business Incubator, CUET
Chattogram-4349, Bangladesh.

Course Summary

No.	Subject	Comments
1	Course Duration	48 Hours (16 Classes, 8 Weeks)
2	Pre-requisites	Yes 1. Understanding of basic computer operations. 2. Basic knowledge of programming concepts. 3. Prior knowledge of specific programming languages like Python
3	Lab Facilities	SKITBI, CUET will provide.

Schedule

Batch – 01 (Offline): Monday & Wednesday 3 pm to 6 pm
Batch – 02 (Online): Monday & Wednesday 6 pm to 9 pm

Coordinator

Professor Dr. M. Moshiul Hoque
Professor, Dept of CSE, CUET
Director, Sheikh Kamal IT Business Incubator in CUET
Former Dean, Faculty of Electrical & Computer Engineering, CUET
Chair, IEEE Bangladesh Section

Trainer

Suvadra Barua
Blockchain Engineer, Universal Machine Inc.

Prerequisites

1. Understanding of basic computer operations.
2. Basic knowledge of programming concepts.
3. Prior knowledge of specific programming languages like Python

What you'll learn:

- Understanding the fundamentals of Blockchain, from blocks to consensus.
- Exploring cryptographic principles as applied to blockchain systems.
- Build a basic blockchain and understand its inner workings
- Types of blockchain, its use cases
- Overview of Ethereum and EVM-based blockchain
- In-depth coverage of the Solidity programming language.
- Writing secure smart contracts and identifying vulnerabilities.
- Using web3.js or ether.js libraries to interact with Ethereum nodes and smart contracts from a web
- application.
- Creating custom tokens on the Ethereum platform
- Building decentralized applications on the Ethereum platform.

Course Modules

Module	Topics Covered	Duration
Module 1: Introduction to Blockchain	- Historical context and evolution of blockchain - Demystifying buzzwords: distributed ledger, consensus mechanisms, cryptography - Understanding decentralization and its implications	3 hours
Module 2: Cryptography in Blockchain	- Basics of Cryptography - The power of cryptography: Hashing, signatures, and security	3 hours
Module 3: Nodes and Consensus Mechanisms	- Different types of Nodes - Consensus Algorithms	3 hours
Module 4: Public Blockchain Platforms	- Introduction to Ethereum - Smart Contracts - Wallet	3 hours
Module 5: Public Blockchain Platforms	- Blockchain layers (L0, L1, L2, L3) - Other Blockchain Platforms	3 hours
Module 6: Beyond Bitcoin: A	- Exploring diverse applications beyond	3 hours

Universe of Applications	cryptocurrencies (supply chain, healthcare, voting)	
Module 7: Build a basic blockchain (Optional)	- Python programming intro - Cryptography and hashing in Python - Design a blockchain block - Implement a chain of blocks - Add transactions and simple Proof-of-Work	3 hours+

Ethereum & Solidity: The Comprehensive Developer's Guide to Building dApps

Prerequisites

1. Understanding of basic blockchain concepts
2. A strong foundation in at least one programming language is crucial.
3. Familiarity with web development concepts especially HTML, CSS, JS, React
4. Understanding fundamental data structures and algorithms

What you'll learn

1. Overview of Ethereum and EVM-based blockchain
2. In-depth coverage of the Solidity programming language.
3. Writing secure smart contracts and identifying vulnerabilities.
4. Using web3.js or ether.js libraries to interact with Ethereum nodes and smart contracts from a web application.
5. Creating custom tokens on the Ethereum platform
6. Building decentralized applications on the Ethereum platform.

Course Modules

Module	Topics Covered	Duration
Module 1: Introduction to Blockchain Development	- Blockchain fundamentals (distributed ledger technology, consensus mechanisms, cryptography) - Basics of Smart Contracts - Ethereum	4 hours
Module 2: Smart Contract Development Fundamentals	- Programming concepts for smart contracts (variables, data types, control flow) - Functionalities and events in smart contracts	6 hours

Module 3: Ethereum Development Tools	- Hardhat Framework - EtherJs	2 hours
Module 4: Smart Contract Testing	- Mocha - Chai	2 hours +
Module 5: Advanced Smart Contract Development	- Token Standards (ERC-20, ERC-721 etc.) - Advanced Solidity Concepts	2 hours
Module 6: Decentralized Application (DApp) Development	- Introduction to DApp Development - Building a Simple DApp	4 hours
Module 7: Blockchain Security	- Security Best Practices for Smart Contracts - Auditing and Testing	2 hours
Module 8: Final Project - DApp Development	- Project Proposal - Project Development - Project Presentation and Evaluation	Depends on Students

Frequently Asked Questions (FAQ)

Can I register for multiple courses?
-Yes, participants can register for multiple courses.

Will there be an overlap in class schedules for multiple courses
-There may be minimal overlap in class schedules, Please check the routine available at the notice board.

What are the available payment methods for online enrollment?
-Payment can be made via cash or online using the "Bkash to Bank" option.

Are there evening batches available for job holders?
-Yes, evening batches will be available. Please check the routine available on the notice board of the website.

Can I switch between online and offline classes?
-Online and offline classes are separate batches, and transfer depends on seat availability.

How will admission be confirmed?
-Admission will be confirmed upon payment; no separate admission exam will be conducted.

Will classes be conducted in locations other than the chosen one?

-No, classes will only be conducted at the chosen location, not in other cities.

What is the profile of the trainers?
-Faculty members will include both academic and industry experts.

What is the last date of enrollment?
-There is no last date of admission. After filling out the batches, enrollment will be closed.

Can I admit physically?
-Yes, Come to the third floor (Room no: 301,302) at the Multipurpose Building of Sheikh Kamal IT Business Incubator, CUET.

Will classes be held during Ramadan?
-Yes, they will.

Will a recorded version be available?
Yes, you will get lifetime access to the recorded version of the classes.