

MBEYA UNIVERSITY OF SCIENCE AND TECHNOLOGY
CENTRE FOR INNOVATION AND TECHNOLOGY TRANSFER
DEPARTMENT OF INNOVATION AND INCUBATION

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P.O. Box 131,
Mbeya,
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20th September, 2021

Blockchain Technology Bootcamp Training

1. Introduction

Blockchain technology is a distributed electronic ledger of digital records, events or transactions that are cryptographically secure, extremely hard to forge, and updateable through a consensus protocol agreeable to all connected nodes. Blockchain is a revolutionary technology in decentralized systems that enable secure decentralized transaction processing while ensuring data privacy and authenticity. It is now playing a significant role in several areas such as the Internet of Things, supply-chain management, manufacturing, cyber-physical systems and healthcare systems to mention a few.

Course Content, Learning Objective and Outcomes

Session Number	Course Content	Learning Objectives	Learning Outcome
1	General Introduction to Blockchain Technology	• Explain the concept of zero-knowledge proofs (ZKPs) and Merkle trees and how they are used in blockchain technologies. • Explain what smart contracts are, how they work, and the benefits of using smart contracts. • Discuss consensus mechanisms and different methods of achieving consensus (Proof of Work, Proof of Stake, etc.). • Discuss the different types of governance models and what types of governance are used in public and private blockchains. • Analyse examples of Decentralized Autonomous Organizations (DAOs). • Examine Central Bank Digital Currencies (CBDC).	• In this session, you will be able to define what is blockchain technology and why it is well-thought-out to be a transformative technology with the potential for change around the world. • You will also see how blockchain is solving problems that were difficult to solve in the past and where this technology is heading.

Session Number	Course Content	Learning Objectives	Learning Outcome
		• Discuss non-fungible tokens and how they impact society. • Discuss blockchain use cases in business enterprises, public and the relevance of blockchain in social impact projects.	
2	Ethereum Blockchain Development	• Understand the tools needed to create smart contracts • Write and read secure Solidity code • Write a Smart Contract on the Ethereum Blockchain and be able to publish and interact with it • Install, configure and use the Truffle Framework • Write tests with the Truffle Framework that contribute to the stability of smart contracts • Deploy to IPFS and understand how to access files	• In this session, you will be able to develop your first application using the ethereum blockchain, and • You'll also be prepared for ethereum certification.
3	Hyperledger Fabric Blockchain Development	• Understanding Hyperledger & Hyperledger Fabric • Getting Started with Hyperledger Architecture • Setting up the Prerequisites • Git Repository- Source Code- Download • Create Basic Hyperledger Fabric Network • Add New Org in Existing Network • Add New Org in Consortium (System Channel) • Add New RAFT Orderer in Existing Network • Developing Hyperledger based solution	• You'll learn how to implement and test a chaincode in Node.js for any use case, manage the chaincode life cycle, create Node.js client applications interacting with Hyperledger Fabric networks, control access to the information based on a user identity, set up and use private data collections etc. • You will also be prepared for Hyperledger Fabric Developer Certification
4	Hyperledger Indy for Decentralized Identity	• Install Indy Nodes • NetworkInstantiation • Network Configuration • Maintenance	• You will learn to set up a decentralized network with Hyperledger Indy
5	Privacy and Security for Blockchain Technology	• Compare blockchain security vs. standard security. • Blockchain in IoT Cybersecurity • Privacy-preserving Blockchain based IoT Ecosystem • Smart Contract Vulnerability Analysis and Security Audit • Security threats and defence on Blockchain	• You will different attack techniques and protection mechanisms in the blockchain ecosystem

2. Target Group

The course is designed for Software Developers, ICT Officers, Systems Administrators, Systems analysts, Banks' Employees, SMEs, Project Officers, Project Managers, Middle-level Managers, Directors, Recent graduates from Higher Learning, Researchers and any other individuals interested to gain knowledge on Blockchain Technology.

3. Date

Registration deadline: **26th October 2021**

Course dates: **1st to 5th November 2021 – 6hrs per day**

4. Fee and Mode of Payment

Course fee: TZS 370,000 per Participant. This fee covers Access to learning material, breakfast and stationery only. This fee does not cover lunch, accommodation and travel costs.

All payments shall be made through CONTROL NUMBER upon applicant request.

Payment for Blockchain Technology Bootcamp Training should be done before the Registration Deadline: **26th October 2021**.

5. Method of Delivery

The course will be delivered through a face to face session using PowerPoint presentation, hands-on session, and panel discussion

6. Tools

Participants should have a laptop with at least 4 GB of RAM, 50 GB of free storage and access to the Internet.

7. Prerequisites/Eligibility

Participants should have attended at least a certificate/diploma/degree in any ICT related course. No prior programming skill is required.

8. Certification

At the end of each training session, successful participants will be awarded the Certificate of attendance of the Mbeya University of Science and Technology.

9. Location/Venue

Venue: All courses are conducted at MUST main campus in Mbeya city.

10. Registration and Inquiries

Registration shall be one week before the commencement of the course

Course coordinator: Eng. Justin A. Mwakatobe – +255742396895

Head of Department Innovation and Incubation

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For more Information visit: www.must.ac.tz / <https://www.must.ac.tz/centre/MTAw>

11. Mode of Application

Please send an SMS or email indicating your name and proof of payment after making payment to the course coordinator.

Justin A Mwakatobe
Course Coordinator
September 2021