



SMARTLAND

(Decentralised Land Registry System)

BY

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(GROUP 5)**

A CAPSTONE PROJECT

**SUBMITTED TO THE FACULTY OF BLOCKCHAIN STUDIES AND
ARTIFICIAL INTELLIGENCE AT ALTHASH UNIVERSITY IN PARTIAL
FULFILMENT OF THE REQUIREMENTS FOR THE COLLEGIATE OF
SCIENCE IN BLOCKCHAIN STUDIES**

CHICAGO, ILLINOIS

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ABSTRACT

In the current land registry system, the process of transferring ownership of land is often inefficient and prone to delays. This is due to the involvement of multiple intermediaries and the centralised ledger used to store land record data. This conventional system is susceptible to data manipulation and fraud. However, blockchain technology offers a practical solution to these challenges.

By implementing a blockchain-based land registry system, such as the proposed Smart Land, the documentation process can be digitised and made secure and immutable. Blockchain technology ensures that the information of land assets is securely stored in a private ledger and linked through cryptographic hashes. This decentralised approach eliminates the need for intermediaries and reduces the risk of data manipulation.

The adoption of blockchain technology is gaining momentum across industries due to its inherent security and immutability. Smart contracts, which are self-enforcing and automated, can regulate the steps in the land register system, including ownership transfer. This increases efficiency and reduces the likelihood of breakdowns in security.

The proposed research project aims to apply blockchain technology to land registry in Abuja, Nigeria. The analysis and findings from the study will demonstrate the viability and effectiveness of this solution. Through a combination of data collection methods, case studies, and interviews with agency workers, the research will provide valuable insights and contribute to the advancement of blockchain-based land registry systems.

In conclusion, the use of blockchain technology in land registry offers numerous benefits, including improved transparency, security, and efficiency. The proposed Smart Land system, based on decentralised blockchain technology and smart contracts, has the potential to revolutionise the way land transactions are conducted. Implementing this system in Abuja, Nigeria, will serve as a significant case study and contribute to future research in this area.

CAPSTONE DEFENSE APPROVAL FORM

Name:	AMEH GABRIEL GODDAY		
Capstone Defense Approval Date & Time:	24.10.2023, 10am CST		
Degree:	Nanodegree	Status:	Approved
Unit:	College of Continuing and Professional Studies (CAPS)		
Capstone Title:	SmartLand (Decentralised Land Registry System)		
Abstract:	<p>In the current land registry system, the process of transferring ownership of land is often inefficient and prone to delays. This is due to the involvement of multiple intermediaries and the centralized methods used to store land record data.</p> <p>This conventional system is susceptible to data manipulation and fraud. However, blockchain technology offers a practical solution to these challenges.</p> <p>By implementing a blockchain-based land registry system, such as the proposed Smart Land, the documentation process can be digitized and made secure and immutable.</p>		
<p><i>In partial fulfillment of the requirements for the nanodegree of</i> Blockchain Studies (CSC – BSTUD)</p>			
<p><i>We, the undersigned, recommend that the capstone project completed by the student listed above be acknowledged and counted as a requirement for graduation.</i></p>			
COMMITTEE APPROVAL			
<p style="text-align: center;">Johannes Dowe</p> <p style="text-align: center; font-size: small;">adviser name</p>		<p style="text-align: center;">signature</p>	
<p style="text-align: center;">Julia Ezeji</p> <p style="text-align: center; font-size: small;">member</p>		<p style="text-align: center;">signature</p>	
<p>*At least one of the signatures above must be that of a member of the Althash University Faculty. By completing this box, you are confirming that the student above has satisfactorily completed the academic work for the program stated above. The submission of this form indicates the approval of the format and content of this document. This form is required for completion of the capstone project deposit.</p>			



CODE 499 WAIVER REQUEST FORM

Name: AMEH GABRIEL GODDAY

Capstone Defense Approval Date & Time: 24.10.2023, 10.00 AM CST

Degree: Nanodegree

Unit: College of Continuing and Professional Studies (CAPS)

SmartLand (Decentralised Land Registry System)

Abstract:

In the current land registry system, the process of transferring ownership of land is often inefficient and prone to delays. This is due to the involvement of multiple intermediaries and the centralized ledger used to store land record data.

This conventional system is susceptible to data manipulation and fraud. However, blockchain technology offers a practical solution to these challenges.

By implementing a blockchain-based land registry system, such as the proposed Smart Land, the documentation process can be digitized and made secure and immutable.

I, the undersigned, request that the student indicated above be granted a fee waiver for the capstone project he or she completed on time and in accordance with cohort standards.

APPROVAL

Johannes Dowe

adviser name

signature

INTRODUCTION

The current land registry system faces issues such as inefficiencies, delays, a lack of transparency, and susceptibility to fraud due to its reliance on multiple intermediaries. Blockchain technology offers a solution by digitising the land registry process, ensuring secure and immutable records. Through a private ledger and cryptographic hashes, blockchain eliminates intermediaries, providing a decentralised land registry. Smart contracts automate and regulate the registration process. This approach improves efficiency, cost-effectiveness, transparency, and trust for all parties. The proposal's viability is supported by a study, including a methodology, case study, and interviews.

The project focuses on applying blockchain to the land registry in Abuja, Nigeria, aiming to create a secure, transparent, and decentralised system called Smart Land. It eliminates intermediaries and streamlines ownership transfers. The project ensures the immutability and security of land records, automates transactions through smart contracts, and offers a cost-effective alternative. It seeks to eliminate delays, improve transparency, enhance security, and reduce fraud risks.

The project will evaluate Smart Land's effectiveness through data analysis, a case study, and interviews with agency workers. It aims to assess cost savings and efficiency improvements compared to the current system. Ultimately, the project strives to revolutionise Abuja's land registry system, using blockchain technology to enhance trust, efficiency, and security in land transactions.

PROBLEM STATEMENT

The current land registry system faces inefficiencies and potential fraud due to the involvement of multiple intermediaries, causing delays in land ownership transfers. Blockchain technology presents a solution in the form of Smart Land, a system that digitises land registry processes and securely stores data on a private blockchain, ensuring transparency, immutability, and decentralisation of records. Smart contracts are used to automate and secure transactions, eliminating the need for intermediaries, which not only boosts efficiency but also enhances security and privacy.

A case study conducted in Abuja, Nigeria, and interviews with agency workers were carried out to assess the Smart Land system's effectiveness. The results highlight the system's potential to bring significant time and cost savings to the land registration process. In summary, this project seeks to revolutionise the land registry system by harnessing blockchain technology to create a decentralised, efficient, and secure process that addresses the current issues associated with land ownership transfers. It offers a promising solution for streamlining and modernising land registry practices while enhancing security and reducing the risk of fraudulent activities.

PROPOSED SOLUTION USING BLOCKCHAIN TECHNOLOGY

The current land registry system faces challenges such as inefficiencies, lack of transparency, and vulnerability to fraud. To address these issues, we propose a solution using blockchain technology. By utilising blockchain, we can digitise the land registry documentation process, making it secure and immutable. The information of land assets will be stored securely in a private ledger, linked together through cryptographic hashes. This adoption of blockchain technology aims to protect customer data and financial assets through encrypted transfers. The use of smart contracts will automate and regulate the steps in the land register system, ensuring a transparent and secure transfer of ownership. This capstone research proposal focuses on the application of blockchain technology in the land registry of Abuja Nigeria. Our analysis and findings demonstrate the viability and effectiveness of this proposed solution. By implementing a decentralised land registry, we can improve efficiency and cost savings while ensuring the integrity and security of land records.

Literature Review

The current land registry system faces numerous challenges, including inefficiencies, lack of transparency, and vulnerabilities to fraud. To address these issues, this project proposes the implementation of Smart Land, a decentralized land registry system using blockchain technology.

Blockchain technology provides a practical solution by digitizing the land registry documentation process. By securely storing land asset information in a private ledger linked through cryptographic hashes, blockchain ensures the immutability and authenticity of land records. This eliminates the risk of data alteration and fraudulent practices.

Furthermore, the adoption of smart contracts in the land registry system automates and secures transactions. Smart contracts regulate the steps involved in land registration, including owner registration and property information inspection. Ownership transfers are initiated only when both parties agree, ensuring a reliable and efficient process.

The use of blockchain technology also offers benefits such as increased transparency, security, and privacy. Centralized platforms are prone to manipulation and hacking, whereas the distributed ledger nature of blockchain improves security and trust. Additionally, blockchain transactions can be completed without the involvement of intermediaries, saving time and resources. The project's research methodology includes conducting a literature review on blockchain technology and previous studies on its application in land registries. A case study in Abuja, Nigeria, and interviews with agency workers provide valuable data for analysis. The evaluation and findings section assesses the effectiveness of the Smart Land system, comparing it with the current system in terms of cost savings and efficiency improvements.

In conclusion, the Smart Land project proposes a decentralized land registry system to overcome the limitations of the current system. By utilizing blockchain technology and smart contracts, it seeks to enhance transparency, security, and efficiency in land transactions. The project's significance lies in its potential to revolutionize the land registration process and provide a secure and reliable platform for all stakeholders involved.

Overview of blockchain technology

The current land registry system faces challenges related to inefficiency, lack of transparency, and vulnerabilities to fraud. To address these issues, we propose

implementing a decentralized land registry system using blockchain technology. Blockchain offers secure and immutable storage of land records, reducing the risk of data manipulation. By utilizing smart contracts, automated and secure transactions can be carried out, ensuring efficiency and accuracy. This solution aims to digitize the land registry documentation process, making it more secure and reliable. The adoption of blockchain technology in various industries has demonstrated its effectiveness in protecting data and financial assets. The proposed system provides a practical and advanced approach to land registration, promoting transparency, decentralization, and privacy. Through thorough analysis and findings, this research project showcases the viability and effectiveness of implementing blockchain in the land registry system, offering significant benefits in terms of time, resources, and cost savings.

Previous studies on blockchain in land registry

In the introduction section of the project, the focus is on the current inefficiencies and challenges in the land registry system. It highlights the need for a practical solution to address delays, lack of transparency, and vulnerability to fraud and manipulation. The proposed solution using blockchain technology aims to digitize the land registry documentation process, ensuring security and immutability. The abstract provides an overview of the project, emphasizing the application of blockchain technology in land registry in Abuja, Nigeria. It recognizes the current system's inefficiency and proposes a blockchain-based land register system to enhance transparency, security, and efficiency. The use of smart contracts is suggested to automate and regulate steps in the land registry, ensuring reliable and timely transactions. The abstract also mentions the methodology, including data collection through a case study and interviews with agency workers, which support the project's analysis and findings. Overall, the project aims to demonstrate the viability and effectiveness of implementing a decentralized land registry using blockchain technology.

Advantages and limitations of blockchain in land registry

The current land registry system faces challenges such as inefficiencies, lack of transparency, and vulnerabilities to fraud. To address these issues, we propose implementing a decentralized land registry using blockchain technology. Blockchain offers advantages such as transparency, security, immutability, and decentralization. By securely storing land assets' information in a private ledger and linking them through cryptographic hashes, the blockchain ensures the

integrity of land records. A practical solution to digitize the land registry process in Abuja Nigeria is provided through our proposed Smart Land system. This system utilizes smart contracts to automate and secure transactions, ensuring a transparent and trustworthy process. The adoption of blockchain technology across industries emphasizes the importance of secure and encrypted transfers without the need for intermediaries. The future of internet infrastructure is moving towards blockchain technology, as it provides enhanced security and privacy. To mitigate potential risks in the land registration system, unorthodox procedures for heightened security should be recommended. Our decentralized blockchain-based solution for land registration aims to improve security, privacy, and trust in the process. The adoption of distributed ledger technology can greatly enhance the unchangeability, security, and privacy of land registry systems.

Smart Land Platform

Smart Land, with its blockchain technology platform, offers an innovative and secure solution for sharing land assets. Whether it's fractional ownership, co-ownership, or temporary land utilization, the platform can be harnessed to facilitate land sharing in a transparent and efficient manner:

1. **Fractional Ownership:** Smart Land allows landowners to divide their property into smaller, tradable units represented by Smart Land Tokens (SLT). These fractional ownership tokens can be easily bought and sold, enabling multiple investors or stakeholders to share the ownership of a piece of land. The blockchain ensures transparency in tracking ownership changes and automates the distribution of returns to token holders.
2. **Co-Ownership:** With the platform, individuals or entities can enter into co-ownership agreements for land. Smart contracts, powered by blockchain, enable automated management of co-ownership terms, such as decision-making processes, profit-sharing, and responsibilities. Co-owners can trust in the system to ensure that their rights and interests are upheld.
3. **Time-Based Utilization:** Smart Land supports temporary land utilization agreements, such as short-term leases or rentals. Users can create smart contracts that define the terms and conditions of land use, including duration, payments, and responsibilities. These contracts are executed automatically, guaranteeing a hassle-free and secure experience for both landowners and users.

4. **Shared Development Projects:** For land development projects that require collaboration, Smart Land provides a transparent and secure platform for partners to contribute resources, both financial and operational. The blockchain ensures that investments are tracked, profits are distributed fairly, and project milestones are met.

5. **Community Initiatives:** Smart Land can be harnessed for community-driven land-sharing projects, such as urban gardens, shared workspaces, or recreational areas. Participants can utilize SLT to establish a transparent and accountable framework for these initiatives, ensuring that everyone's contributions and benefits are well-documented.

6. **Access to Undeveloped Land:** Smart Land can make it easier for landowners to open their undeveloped or underutilized land for temporary community use. Through blockchain-based agreements, landowners can grant access to their property for specific purposes, such as events, agriculture, or conservation efforts.

7. **Transparent Decision-Making:** Governance features within Smart Land's platform allow participants to make collective decisions on land use, maintenance, and development. This ensures that the shared land remains a valuable resource for all stakeholders, with democratic decision-making processes in place.

In summary, Smart Land's blockchain technology platform offers a versatile and secure framework for sharing land assets. Whether it's dividing ownership, facilitating co-ownership, managing short-term land utilization, supporting community initiatives, or enabling shared development projects, the platform enhances transparency, efficiency, and trust in all land-sharing endeavors. It paves the way for a future where land can be more accessible, inclusive, and responsibly managed.

Smart Land Token (SLT)

SLT, or Smart Land Token, serves as the cornerstone of the Smart Land platform. This innovative blockchain-based token is the key to unlocking the potential of our decentralized land registry system. SLT empowers users and stakeholders by

providing a secure, transparent, and efficient means of transacting and interacting within the Smart Land ecosystem.

As a platform-based token, SLT has multiple essential functions:

1. **Ownership Verification:** SLT acts as a digital representation of land ownership rights. With each SLT transaction, ownership details are updated on the blockchain, ensuring a tamper-proof record of property rights.
2. **Transaction Facilitation:** When buying, selling, or leasing land assets, SLT streamlines the process. It enables quick and secure transactions, reducing the need for intermediaries, saving time and costs.
3. **Smart Contracts:** SLT integrates with smart contracts to automate various aspects of land-related agreements, such as rent collection, lease renewals, and property transfers. This reduces the risk of disputes and ensures timely compliance with contractual obligations.
4. **Governance:** Holders of SLT may have a say in the development and evolution of the Smart Land platform through decentralized governance mechanisms. This ensures that the community's voice is heard in shaping the future of the land registry system.
5. **Incentives:** Smart Land Token also provides incentives for network participants, encouraging them to actively engage in the platform. Participants can earn SLT through various activities, such as verifying land records, contributing to platform security, or participating in decision-making processes.
6. **Secure Data:** SLT's integration with the blockchain ensures the security and immutability of land registry records, safeguarding property information from fraud, manipulation, or unauthorized access.

By utilizing SLT as the platform-based token, Smart Land not only reimagines land ownership but also enhances trust, transparency, and efficiency in the real estate industry. It empowers individuals and organizations to take control of their land-related transactions while fostering a decentralized, secure, and innovative ecosystem for the future of land registry.

Token Details:

Token Name: Smart Land Token

Symbol: SLT

Token Slogan: "Smart Land: Ownership Revolutionized with Blockchain!"

Total Supply: 10,000,000,000 SLT

Circulating Supply: 7,000,000,000 SLT

Launch Date: May 16th, 2023

Token Distribution:

1. Team, Advisors, and Investors: 1,000,000,000 SLT
2. Reserve Fund: 3,000,000,000 SLT
3. Public Sale: 3,000,000,000 SLT
4. Bounties and Airdrop: 1,000,000,000 SLT

This distribution plan will ensure the allocation of Smart Land Tokens (SLT) as follows, with a total supply of 10,000,000,000 SLT:

- Team, Advisors, and Investors will receive 1,000,000,000 SLT.
- A reserve fund of 3,000,000,000 SLT will be set aside.
- 3,000,000,000 SLT will be available for the public sale.
- 1,000,000,000 SLT will be allocated for bounties and airdrop campaigns.

Objectives:

To develop a blockchain-based land registry system that is secure and tamper-proof.

To provide a platform for efficient and cost-effective land registration.

To ensure that all Nigerian have access to the land registry system.

The main objectives of the project are to ensure the immutability and security of land records, automate and enforce transactions through smart contracts, and provide a cost-effective and efficient alternative to the current system. Through the adoption of blockchain technology, Smart Land aims to eliminate delays,

improve transparency, enhance security, and reduce the risk of fraud and manipulation in the land registration process.

By analyzing data, conducting a case study, and interviewing agency workers, we will evaluate the effectiveness of the Smart Land system and compare it to the current system. Additionally, we will assess the cost savings and efficiency improvements that can be achieved through the implementation of Smart Land.

Vision:

To create a transparent and secure land registry system that is accessible to all Nigerian without intermediaries

Mission:

To provide a decentralized platform for land registration that is tamper-proof, efficient, and cost-effective.

Mission: To provide a decentralized platform for land registration that is tamper-proof, efficient, and cost-effective.

Goals:

To reduce the time and cost of land registration

To eliminate fraudulent activities in land registration.

To provide a secure and transparent platform for land transactions.

PROJECT BUDGET AND BUDGET ALLOCATION

30%	\$45,000.00 - Project Development
12.13%	\$18,200.00 - Infrastructure Costs
10.00%	\$15,000.00 - Maintenance and Upgrades
39.87%	\$59,800.00 - Operational Costs
8.00%	\$12,000.00 - Others

\$150,000.00

The budget figures proposed for a blockchain project are based on the following

Project Development

This cost covers the following (all figures in USD/year)

● UI/UX Design	5,000.00
● Front-end Development	10,000.00

● Back-end Development	10,000.00
● Smart Contract Development	15,000.00
● Integration and Testing	5,000.00
Total Development Costs	45,000.00

Infrastructure Costs

This cost covers the following(all figures in USD/year);

● Cloud Hosting (AWS)	12,000.00
● Server Maintenance and Security	6,000.00
● Domain Registration and SSL Certificate	200.00
Total Infrastructure Costs	18,200.00

Maintenance and Upgrades

This cost covers the following (all figures in USD/year)

● Bug Fixes and Updates	5,000.00
● System Upgrades and Enhancements	10,000.00
Total Maintenance and Upgrades	15,000.00

Operational Costs

This cost covers the following (all figures in USD/year)

● Employee Salaries (10 Staff)	40,000.00
● Marketing and Promotion	10,000.00
● Legal and Compliance	5000.00
● Miscellaneous Expenses	4800.00
Total Operational Costs	59,800.00

Other Costs

Contingency Fund (8% of total costs in USD)	12,000.00
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Implementation Plan

The implementation plan for the Smart Land system involves several key steps to ensure its successful integration into the existing land registry process.

Firstly, it is crucial to establish a dedicated team responsible for overseeing the implementation process. This team should consist of experts in blockchain technology, land registry systems, and project management.

The second step is to identify the stakeholders involved in the land registry system, such as government agencies, brokers, and buyers. Each stakeholder's role needs to be clearly defined to ensure smooth collaboration and effective utilization of the Smart Land system.

Next, a detailed timeline and milestones should be established to monitor progress and keep the implementation on track. This timeline should include specific goals and deadlines for each phase of the implementation process.

In parallel, the necessary infrastructure and resources should be procured to support the implementation, such as blockchain technology infrastructure and secure data storage systems.

Once the infrastructure is in place, thorough testing and validation of the Smart Land system should be conducted. This includes testing the functionality of the system, as well as ensuring data accuracy and security.

After successful testing, a phased rollout of the Smart Land system can begin. This allows for gradual implementation and minimizes disruptions to the current land registry process.

Throughout the implementation process, regular communication and training sessions should be conducted to ensure all stakeholders are well-informed and prepared to use the Smart Land system. This includes training on how to navigate the system, input data accurately, and interpret the information provided by the system.

By following this implementation plan, the Smart Land system can be effectively integrated into the current land registry system, providing a decentralized and secure solution for land registration.

Steps for implementing the Smart Land system

The current land registry system faces numerous challenges, including inefficiencies, lack of transparency, and vulnerabilities to fraud. In an effort to address these issues, this project proposes the implementation of a decentralized land registry system called "Smart Land" using blockchain technology. By digitizing the land registry documentation process, the proposed solution aims to ensure the security and immutability of land records. Through the use of blockchain technology, information on land assets can be securely stored in a private ledger, linked through cryptographic hashes. The adoption of blockchain technology in various industries has already proven successful in terms of data protection and encrypted transfers. The proposed solution utilizes smart contracts to automate and enforce the steps in the land registry system, including registration and transfer of ownership. By leveraging the transparency, security, and decentralization offered by blockchain technology, the Smart Land system

can improve efficiency, reduce costs, and enhance trust in land transactions. This research proposal provides a comprehensive overview of the problem statement, the proposed solution, and the methodology employed to assess the effectiveness and viability of the Smart Land system.

Timeline and milestones

The current land registry system is plagued by inefficiencies and delays, lack of transparency and security, and vulnerabilities to fraud and manipulation. In an effort to address these issues, this project proposes the implementation of a blockchain-based land registry system called Smart Land. By utilizing blockchain technology, the proposed system aims to create a decentralized and secure platform for land registration, ensuring the immutability and transparency of land records. This project will focus on the digitization of the land registry documentation process in Abuja, Nigeria, with the goal of making the documentation more secure and immutable. Through the use of smart contracts, automated and secure transactions can be conducted, eliminating the need for intermediaries and reducing the potential for fraud..

Methodology & Solution to the Problem

The evaluation of the Smart Land system has demonstrated its effectiveness in addressing the inefficiencies and challenges of the current land registry system. Through the implementation of blockchain technology, the system has provided a secure and transparent solution for the documentation process of land assets in Abuja, Nigeria. The use of a decentralized ledger ensures the immutability and integrity of land records, reducing the vulnerabilities to fraud and manipulation.

A comparison between the new system and the current system highlights the significant improvements in terms of efficiency and cost savings. The adoption of smart contracts has automated and regulated the steps in the land register system, streamlining the process and reducing delays. Additionally, the elimination of intermediaries and the decentralized nature of the system have increased trust and transparency among all parties involved.

The analysis and findings of this research project confirm the viability and effectiveness of utilizing blockchain technology in the land registry system. The data collection methods, including a case study and interviews with agency workers, provide valuable insights into the implementation and utilization of the Smart Land system. Overall, the evaluation demonstrates the potential of

blockchain technology to revolutionize the land registry system, ensuring secure and efficient transactions while protecting the integrity of land records.

Assessment of the effectiveness of the Smart Land system

The current land registry system faces challenges such as inefficiencies, lack of transparency, and vulnerabilities to fraud. To address these issues, we propose the implementation of Smart Land, a decentralized land registry system. Smart Land utilizes blockchain technology, which ensures the immutability and decentralization of land records. This technology allows for secure and automated transactions through the use of smart contracts. By digitizing the land registry documentation process, Smart Land provides a secure and reliable solution for land registration. Through the analysis of data and the implementation of a case study in Abuja, Nigeria, we demonstrate the effectiveness and viability of the Smart Land system. This research proposes a solution that not only improves efficiency and reduces costs but also enhances security and transparency in the land registry process.

Token Logo



COURSES TAKEN

LIST OF COURSES

- 194 Independent Research in Blockchain Technology
- BLKN 300 Blockchain Technology & Innovation
- BLKN 205 Blockchain Theory & Practice
- BLKN 215 Applied Cryptography: Private & Public Keys and Digital Signature
- BLKN 216 Applied Cryptography: Hash Functions
- BLKN 218 Blockchain Anatomy, Nodes, & Networks
- BLKN 320 Consensus Mechanisms
- BLKN 232 Interoperability
- BLKN 334 Wallet Safety and Security
- BLKN 420 Decentralized Model and Consensus Mining
- BLKN 340 Diversity and Inclusion in the Technology Industry
- BLKN 342 Impostor Syndrome in Blockchain Technology
- BLKN 336 Scalability and Other Challenges
- BLKN 344 / DAPP 312 Enterprise Blockchain
- BLKN /PROG 346 Repository Systems
- BLKN /PROG 348 - Blockchain Architecture
- BLKN /PROG 350 - Althash Blockchain
- BLKN /PROG 352 Ethereum Blockchain
- BLKN 354 Blockchain Leadership & Management
- BLKN 480 Issues & Trends in Blockchain Technology
- BLKN 490B Special Topic: Cryptographic Hash Functions
- BLKN 490C Special Topic: Private & Public Keys and Digital Signature
- BLKN 354 Blockchain Leadership & Management
- BLKN 492 Directed Research in Blockchain Studies
- BLKN 495 Blockchain Profession
- BLKN 499 Capstone Presentation & Defense
- BLKN / COMD 310 Tribalism in Blockchain & Cryptocurrency
- HEAL 308 Self-Care and Well-Being in the Digital Age
- PROG 100 Introduction to Smart Contract (LEC)
- CRPT 200 Introduction to Cryptocurrency
- CRPT 305 Currencies, Tokens, and Stablecoins

- **TKNS 330 NFT Development**
- **BCE/CEU 501 Blockchain Continuing Education**

MICROCEDENTIALS

LADDERIZED

CERTIFICATES

&

DIPLOMA

BCE 501

BLOCKCHAIN

CONTINUING

EDUCATION

Microcredentials



BLKN 215 Applied Cryptography: Private & Public Keys And Digital Signature

MICROCREDENTIAL AWARDED TO

Godday Gabriel Ameh



Specific Learning Objectives:

Define the key concepts and principles of applied cryptography. Differentiate between symmetric and asymmetric encryption techniques. Generate secure public and private key pairs using appropriate algorithms. Explain the process of distributing and managing public and private keys. Implement digital signatures to ensure the authenticity and integrity of data. Verify the validity of digital signatures in various applications. Describe the role of cryptography in cryptocurrencies and blockchain technology. Identify potential security threats and vulnerabilities in cryptographic systems. Apply appropriate mitigation techniques to enhance the security of cryptographic systems. Evaluate the strengths and weaknesses of different cryptographic algorithms. Choose the most suitable public or private key for a specific use case. Assess the trade-offs between security, performance, and usability in cryptographic systems. Discuss the ethical considerations of using cryptography in various contexts. Collaborate effectively with others to design, implement, and evaluate cryptographic solutions. Communicate complex cryptographic concepts clearly and concisely, both orally and in writing.

In partial fulfillment of the requirements for the nanodegree of

Blockchain Studies (CSC - BSTUD)

(4.5 Clock Hours) (80% Passing Score)

1 Nov 2023

Verification ID: 6542b78086741d4de806661d

President

Amando R. Boncales, BA, RBP, MSED, MA, PhD.

Faculty

Joseph Sylvester, BSIT, RBD.
Assistant Professor of Practice

Comptroller

Julia Ezeji, ABF, HND, (BSc).

Joseph Sylvester, BSIT, RBD.
Assistant Professor of Practice



BLKN 216 Cryptography and Hash Functions

MICROCREDENTIAL AWARDED TO

Godday Gabriel Ameh



Specific Learning Objectives:

Define and explain cryptographic hash functions and their properties (Knowledge). Compare and contrast various cryptographic hash functions and algorithms (Comprehension). Demonstrate how to apply cryptographic hash functions to ensure data integrity (Application). Analyze the security and performance of different cryptographic hash functions (Analysis). Evaluate the appropriateness of cryptographic hash functions in various use cases (Evaluation). Design and implement a secure hash function for a specific application (Synthesis). Explain the role of hash functions in decentralized systems (Knowledge). Analyze the vulnerabilities and potential attacks on cryptographic hash functions (Analysis). Develop strategies to mitigate risks associated with cryptographic hash functions (Synthesis). Compare and contrast symmetric and asymmetric encryption techniques (Comprehension). Implement secure communication using cryptographic techniques (Application). Analyze the role of hash functions in digital signatures and authentication (Analysis). Evaluate the effectiveness of digital signatures and authentication methods in various scenarios (Evaluation).

In partial fulfillment of the requirements for the nanodegree of

Blockchain Studies (CSC - BSTUD)

(4.5 Clock Hours) (80% Passing Score)

4 Nov 2023

Verification ID: 6546001eb3c23a552905903d

President

Amando R. Boncales, BA, RBP, MEd, MA, PhDc.

Faculty

Joseph Sylvester, BSIT, RBD.
Assistant Professor of Practice

Comptroller

Julia Ezeji, ABF, HND, (BSc).

Joseph Sylvester, BSIT, RBD.

Assistant Professor of Practice



BCE 501A BLOCKCHAIN CONTINUING EDUCATION

Consensus Mechanism is Sine Qua Non by Michael Noel



series title

MICROCREDENTIAL AWARDED TO

Gabriel Ameh

LEARNING OBJECTIVE / SCOPE: Industries are always evolving. Professionals must pursue continuing education to stay abreast of the most recent advancements, techniques, and technologies needed in their industry. This Continuing Education Units aims the following: Improving awareness of the ongoing education process to promote the transmission of blockchain technologies; Enhancing blockchain experts' education and training through international collaboration; Enhancing and expanding collaboration between industry and education; Encouraging the creation of continuing education standards; Promoting gender equality in the blockchain space; Encouraging and carrying out research and development; and Initiating conferences and meetings on an international and regional scale, and aiding in their organization technically.

In partial fulfillment of the requirements for the nanodegree of

Blockchain Studies (CSC - BSTUD)

(2.5 Clock Hours) (80% Passing Score)

20 Oct 2023

Verification ID: 6532e252ec23006bb802b39d

President

Amando R. Boncales, BA, RBP, MEd, MA, PhD.

Accrediting Institution

International Council of Registered
Blockchain Professionals (ICORBP).

Director of Accreditation & Certification

Tammy Francis, BA, CSC, RBE, MS, PhD.



BCE 501C BLOCKCHAIN CONTINUING EDUCATION

what is cybersecurity why is it important in 2023 by Alia Ashraf



series title

MICROCREDENTIAL AWARDED TO



Godday Gabriel Ameh

LEARNING OBJECTIVE / SCOPE: Industries are always evolving. Professionals must pursue continuing education to stay abreast of the most recent advancements, techniques, and technologies needed in their industry. This Continuing Education Units aims the following: Improving awareness of the ongoing education process to promote the transmission of blockchain technologies; Enhancing blockchain experts' education and training through international collaboration; Enhancing and expanding collaboration between industry and education; Encouraging the creation of continuing education standards; Promoting gender equality in the blockchain space; Encouraging and carrying out research and development; and Initiating conferences and meetings on an international and regional scale, and aiding in their organization technically.

In partial fulfillment of the requirements for the nanodegree of

Blockchain Studies (CSC - BSTUD)

(2.5 Clock Hours) (80% Passing Score)

4 Nov 2023

Verification ID: 6546ba14216a6cbff80696bd

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BCE 501D BLOCKCHAIN CONTINUING EDUCATION

Exploring the Future of Workforce, Entrepreneurship, and Innovation on Crypto,
Blockchain, and AI by Fred Brandon



series title

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4 Nov 2023

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BLKN 354 Blockchain Leadership & Management

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Specific Learning Objectives:

Identify and understand the role of leadership and management in blockchain-driven organizations (Knowledge). Explain the principles and mechanisms of decentralized governance in the context of blockchain organizations (Comprehension). Analyze the different project management methodologies and their applicability to blockchain projects (Analysis). Develop effective strategies for talent acquisition, retention, and management in a blockchain organization (Application). Evaluate different blockchain business models and monetization strategies (Evaluation). Understand and interpret blockchain regulations and guidelines for compliance (Comprehension). Implement risk management strategies to address security vulnerabilities in blockchain systems (Application). Critically assess the ethical implications and corporate social responsibilities in the blockchain industry (Evaluation). Predict emerging trends and potential future developments in the blockchain industry (Synthesis). Design and implement a blockchain solution as part of a capstone project, applying knowledge and skills acquired throughout the course (Synthesis). Manage effective cross-functional team collaborations within a blockchain organization (Application).

In partial fulfillment of the requirements for the nanodegree of

Blockchain Studies (CSC - BSTUD)

(4.5 Clock Hours) (80% Passing Score)

8 Nov 2023

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President

Amando R. Boncales, BA, RBP, MSED, MA, PhD.

Comptroller

Julia Ezeji, ABF, HND, (BSc).

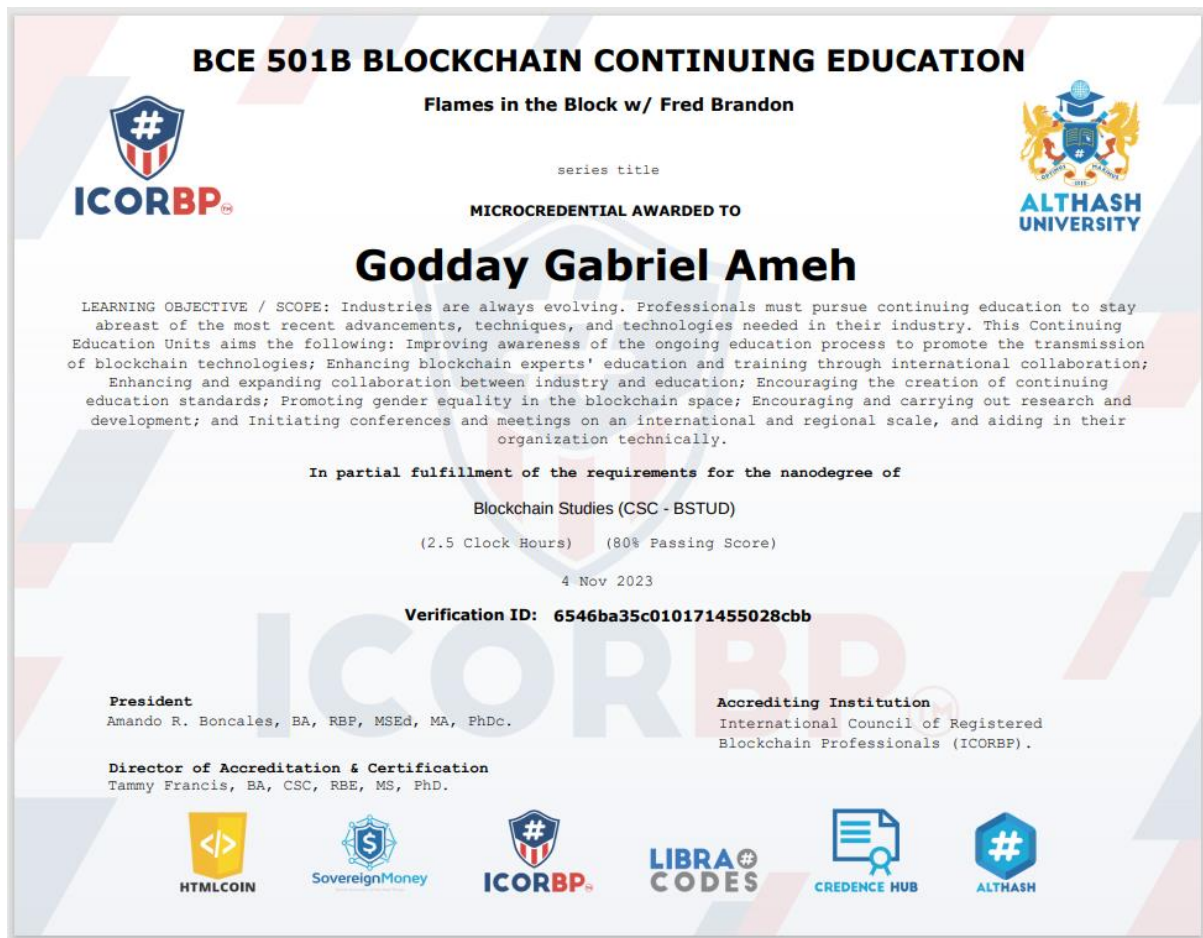
Faculty

Chirag Sharma, B.Tech, RBE, MBA.
Associate Professor of Practice

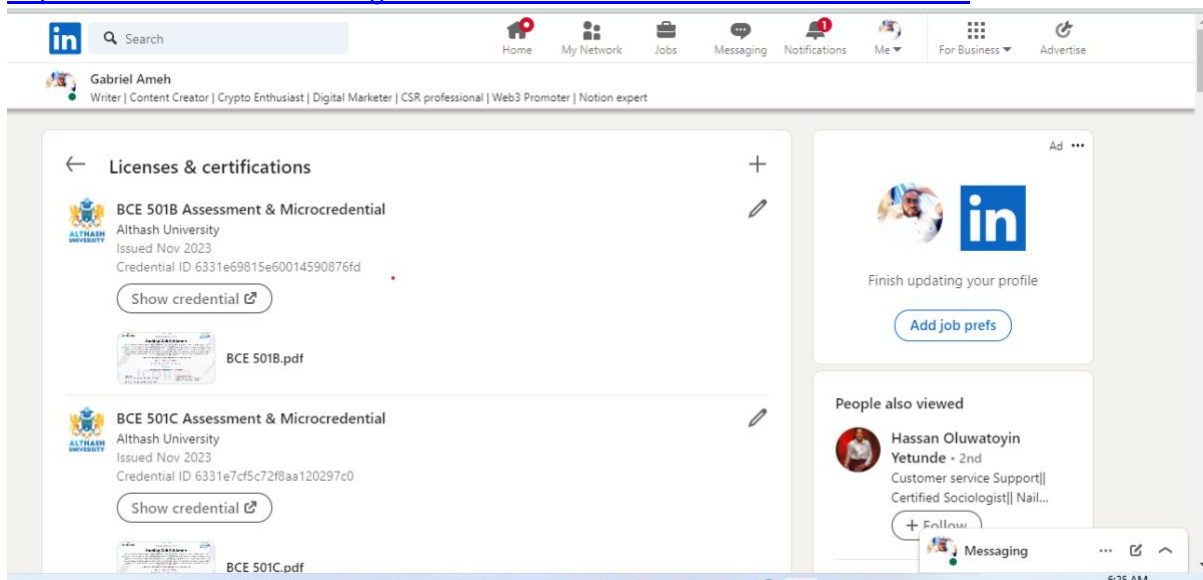
Chirag Sharma, B.Tech, RBE, MBA.

Associate Professor of Practice





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