

PROGRAM (NEW 2026)

CIP O*NET code 15-1299.07 as the anchor for blockchain roles.

US CIP - 11.0103 Information Technology

Blockchain Foundations Certificate (BLCF.CERT)

Total Credits: 16

The Blockchain Foundations Certificate introduces students to core blockchain concepts, cryptographic principles, and smart contract fundamentals, while strengthening essential academic and professional skills. Students explore distributed (decentralized) ledger technologies and evaluate when blockchain solutions are appropriate compared to traditional (centralized) systems. Coursework emphasizes logical reasoning, computer applications, written communication, and quantitative problem-solving. This certificate is designed for dual-enrolled students, early college learners, and individuals seeking foundational preparation for continued study or entry-level roles supporting emerging digital technologies.

PLO 1. Explain foundational blockchain concepts, cryptography, and decentralized system structures.

PLO 2. Evaluate blockchain use cases, limitations, risks, and ethical considerations in business and society.

PLO 3. Apply introductory smart contract logic and computational thinking to solve basic blockchain-related problems.

PLO 4. Use professional communication, quantitative reasoning, and computer applications to support blockchain-informed decision-making.

PLO 5. Demonstrate workforce-ready academic and digital skills aligned with continued study or entry-level technology pathways.

Required Courses

3	BLC110	Blockchain Fundamentals & Cryptography
3	BLC120	Smart Contracts & Solidity
3	CIS201	Advanced Information Technologies
3	ENG131	Writing Experience
4	MAT130	Quantitative Reasoning

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Blockchain Foundations Certificate		BLC110	BLC120	ECM201	ENG131	MAT130
Program Learning Outcomes Alignment Matrix						
Legend: I = Introduced, R = Reinforced / Assessed, M = Mastery / Capstone demonstration						
PLO 1. Explain foundational blockchain concepts, cryptography, and decentralized system structures.		I	R			
PLO 2. Evaluate blockchain use cases, limitations, risks, and ethical considerations in business and society.		I	R			
PLO 3. Apply programming logic practices and smart contract reasoning to solve blockchain/Web3 problems.		I	R	I		
PLO 4. Use professional communication, quantitative reasoning, and computer applications to support blockchain-informed decision-making.		I	R	R	R	R
PLO 5. Demonstrate workforce-ready academic and digital skills aligned with continued study or entry-level technology pathways.		I	R	R	R	I

CURRICULUM MAP

Option 1

Blockchain Foundations Cert	Credits	Fall	
15 week	4	MAT130	Quantitative Reasoning
1st 7 week	3	BLC110	Blockchain Fundamentals & Cryptography
2nd 7 week	3	CIS201	Advanced Information Technology
Total Credits	3	BLC120	Smart Contracts & Solidity
16	3	ENG131	Writing Experience

OR

Option 2

Blockchain Foundations Cert	Credits	Fall	
15 week	4	MAT130	Quantitative Reasoning
1st 7 week	3	BLC110	Blockchain Fundamentals & Cryptography
2nd 7 week	3	ENG131	Writing Experience
Total Credits			
10			

Blockchain Foundations Cert	Credits	Spring	
15 week	3	CIS201	Advanced Information Technology
1st 7 week	3	BLC120	Smart Contracts & Solidity
2nd 7 week			
Total Credits			
6			

COURSE (NEW 2026)

BLC110 – Blockchain Fundamentals & Cryptography (3 credits)

Course Description:

This course introduces the foundational concepts of blockchain technology, including distributed ledgers, cryptography, and consensus mechanisms. Students examine centralized and decentralized systems, model transaction flows using logical reasoning, and evaluate real-world scenarios to determine when blockchain solutions are appropriate. Emphasis is placed on critical thinking, ethical considerations, and professional decision-making to prepare students for further technical study or workforce applications.

Student Learning Statement:

Students will evaluate blockchain concepts, cryptographic and programming logic principles to determine appropriate applications in real-world systems and professional contexts.

Outcomes & Performance Indicators (CBE-Aligned)

- 1. Analyze blockchain concepts and system architecture to explain how decentralized networks operate.**
 - a. Describe blockchain structure, transactions, and nodes using stepwise reasoning.
 - b. Compare centralized and decentralized systems using flowcharts.
- 2. Evaluate cryptographic and trust mechanisms used to secure blockchain systems.**
 - a. Explain hashing, digital signatures, and immutability.
 - b. Identify cybersecurity considerations in blockchain environments.
- 3. Assess blockchain use cases by examining applicability, limitations, and ethical considerations.**
 - a. Evaluate scenarios for blockchain adoption.
 - b. Discuss limitations, risks, and ethical implications.

COURSE (NEW 2026)

BLC120 – Smart Contracts & Solidity (3 credits)

Course Description:

Introduces smart contract development with Solidity (the industry-standard Ethereum smart contract language) to implement business logic, including logic, functions, and events. Students learn to implement secure contracts that serve as the backend logic for decentralized applications (dApps), applying programming logic, testing, and debugging practices. Emphasis is on secure coding practices, logical reasoning, and testing. Students apply logical reasoning and flow modeling, implement and test secure contracts, and develop foundational programming skills for blockchain applications and workforce roles.

Pre-req: BLC110

Student Learning Statement:

Students will develop, test, and deploy smart contracts in Solidity to support decentralized applications, applying programming logic and secure coding principles.

Outcomes & Performance Indicators (CBE-Aligned)

- 1. Develop smart contracts using Solidity to implement business logic for dApps.**
 - a. Create Solidity smart contracts using variables, functions, and control structures.
 - b. Apply logical conditions using flowcharts/ pseudocode to support contract execution.
- 2. Implement and test smart contracts within a blockchain development environment**
 - a. Deploy smart contracts to a local or test blockchain network.
 - b. Test and debug contract behavior using development tools.
- 3. Apply secure coding practices to identify and reduce smart contract vulnerabilities.**
 - a. Identify common smart contract security risks
 - b. Apply best practices to improve contract reliability and security.

COURSE (REVISED 2026)

ECM/CIS 201 - Advanced Computer Technologies (3 credits)

OVERVIEW

The course enhances electronic communication skills and computer concepts essential to electronic business (e-business) strategies. Topics include connecting base business operations with convergence and mobile technologies, as well as emphasis on cross-platform and web sharing of files, data, and business transactions.

STUDENT LEARNING STATEMENT

Students will apply electronic communication, collaboration, and digital tools to support e-business strategies and assess the impact of Web3, blockchain, and social media on business operations and transactions.

COURSE OUTCOMES & PERFORMANCE INDICATORS

- 1. Produce effective web-based collaborative files and professional communications**
 - a. Evaluate and apply file conversion software to ensure reliable cross-platform file sharing
 - b. Utilize convergence and mobile technologies (e.g., Google Workspace) to support business collaboration
 - c. Conduct professional business meetings using web conferencing applications
- 2. Develop and assess social communication strategies and digital brand presence**
 - a. Apply social communication methods, advanced internet searches, and mobile technologies to support business operations
 - b. Critique business and personal web profiles for effectiveness, consistency, and brand alignment
 - c. Analyze the risks and benefits of social media marketing in an e-business context
- 3. Demonstrate effective digital communication and e-business practices, integrating Web3 and blockchain technologies.**
 - a. Apply Web 2.0 tools for digital communication, engagement, and online transactions
 - b. Evaluate e-business strategies, including social media impact and revenue models
 - c. Analyze how Web3 and blockchain affect trust, ownership, and digital transactions

GENERAL EDUCATION COURSES (EXISTING)

MAT 130 QUANTITATIVE REASONING (4 CR)

Quantitative reasoning develops student skills in analyzing, synthesizing and communicating quantitative information. Cultivates algebraic reasoning and modeling skills through a quantitative literacy lens. Emphasizes critical thinking and the use of multiple strategies in applied contexts. Topics include proportional and statistical reasoning, probability, and evaluation of bias and validity.

ENG 131 WRITING EXPERIENCE I (3 CR)

This is an intensive writing course. Narrative and descriptive modes are stressed. Basic research strategies are introduced. An end-of-the-semester portfolio is required.