# POLKADOT AND KUSAMA BLOCKCHAIN ECOSYSTEM ACADEMIC PROGRAM

## GENERAL OBJECTIVE

To train participants in theoretical and practical elements necessary to design and develop software projects using the POLKADOT and KUSAMA blockchain.

## SPECIFIC OBJECTIVES

1. Provide the adoption of use cases using the POLKADOT and KUSAMA blockchain.

2. Provide participants with the elements required for the design and development of projects using the POLKADOT AND KUSAMA blockchain.

3. To develop in the participants knowledge and skills to design, program and implement projects using the POLKADOT and KUSAMA blockchain technology.

The academic program consists of thirteen (15) modules divided into three blocks, with a duration of 78 academic hours. Participants who successfully complete each of the blocks will be awarded a certificate of participation as long as they have completed at least 90 percent of the block in which they choose to participate.

The educational components will be divided into three blocks:

Basic Block: made up of modules 1 to 6.

Technical Block: made up of modules 7 to 9.

Functional Block: made up of modules 10 to 15.

## BENEFITS

**For the organization:** maintain unified work standards and measure training effectiveness.

**For learners:** access to learning content anytime, anywhere.

## TEAM

The academic program will be executed by the project team and will count with the participation of accredited POLKADOT and KUSAMA ambassadors who have the technical competencies for each module.

## DETAILED PROGRAM

**MODULE 1. Introduction to Blockchain:** Concept of blockchain. Bitcoin, origin, evolution. What is POLKADOT AND KUSAMA, problems it solves, why POLKADOT AND KUSAMA, dpps decentralized applications, what it offers. **(4 academic hours)**

**MODULE 2. Security.** Blockchain, hardware, software, users and attack vectors. **(2 academic hours)**

**MODULE 3. Introduction to Smart Contracts and Use Cases.** What is a smart contract, types, use cases. Differences between smart contract, Parachain and parathread. **(2 academic hours)**

**MODULE 4. Roadmap for Development in blockchain.** To know the roles and technological competencies required for each role, which allow the execution of a development project. Project Manager, Technical Manager, DevOps, Developer: Core Blockchain, Frontend, Backend, Smart Contract Engineers and DeFi Developer. **(2 academic hours)**

**MODULE 5. Business Model Generation. (6 academic hours)**

5.1 The 9 blocks of the Canvas **(4 academic hours)**

5.2 Profit Model Blockchain **(2 academic hours)**

**MODULE 6. POLKADOT and KUSAMA Ecosystem.** Details of elements. Interoperability, Relay Chain, Parachains, Parathreads, Bridges, Nominators, Validators, Collators and Fishermen. **(2 academic hours)**

**MODULE 7. Wallet, testnet and mainnet:** Polkadot, Canary network: Kusama, Official testnets: Westend. **(2 academic hours)**

7.1 Functionalities

**MODULE 8. Development Tools and Test Environment.** To know the programming languages and the necessary tools that allow developers to prepare a test environment for the design and development of projects (installation and testing of each of the tools). **(40 academic hours)**

8.1 Rust Programming Language **(12 academic hours)**

8.1.1 Basic **(4 hours)**

8.1.2 Intermediate **(4 hours)**

8.1.3 Advanced **(4 hours)**

8.2 Programming Language Ink! Programming Language **(12 academic hours)**

8.2.1 Ink! Y Cargo **(4 hours)**

8.2.2 Canvas Node - Simple Blockchain substrate that includes functionality for smart contracts **(4 hours)**

8.2.3 Canvas UI - Frontend for deployment and interaction of contracts **(4 hours)**

8.3 Substrate **(16 academic hours)**

8.3.1 Architecture and Installation **(4 hours)**

8.3.2 Runtime Developer **(4 hours)**

8.3.3 Playground substrate **(4 hours)**

8.3.4 Integration **(4 hours)**

**MODULE 9. Oracles on Chainlink.** What are oracles, features, create, compile and deploy an oracle, register an oracle on the blockchain, create query, query response, get query, get and verify response. **(4 academic hours)**

**MODULE 10. Treasury. Project Finance (2 academic hours)**

10.1 What is it?

10.2 How does it work?

10.3 Where and how to apply?

**MODULE 11. Staking (2 academic hours)**

11.1 What is it?

11.2 How does it work?

11.3 How and where to participate?

**MODULE 12. Parachain Auction (2 academic hours)**

12.1 What are they?

12.2 How does it work?

12.3 Who and where?

**MODULE 13. Parachain Crowdloans (2 academic hours)**

13.1 What are they?

13.2 How do they work?

13.3 Who and where?

**MODULE 14. NFT (4 academic hours)**

13.1 What are they?

13.2 Use cases?

13.3 How and where to create them?

**MODULE 15. The Metaverse**. To know the characteristics of virtual environments where people interact with each other through elements of physical and virtual reality to entertain themselves, to study, to work, among other activities of individuals. **(2 academic hours)**