



CHRIST
COLLEGE (AUTONOMOUS)
IRINJALAKUDA, KERALA
Reaccredited by NAAC with 'A' grade

COURSE CODE

NAME OF THE COURSE

CPCC37

CRYPTOCURRENCY

OFFERED BY

ABOUT COLLEGE

COMMERCE

COURSE COORDINATOR

Prof. Tom Jacob

Christ College (Autonomous), Irinjalakuda established in the year 1956 by CMI fathers has always been a place where young generations are moulded towards a bright future. College has excellent infrastructure, with state of the art laboratories, seminar rooms and lecture halls. The campus is Wi-Fi enabled. Presently College is home for 4500+ students, 200 teaching staff and 45 supporting staff. The strength of the College lies in its hardworking and tech savvy teachers who are eager to involve in all matters of students. The lush green campus with gardens and open gym is moving towards the next phase on education both offline and online.

LEARNING OUTCOMES

CO1: To understand Blockchain and its main application cryptocurrency.

CO2: To learn how this system works and how can they utilize and what application.

CO3: To be familiar with blockchain and cryptocurrency concepts.

COURSE MODULE

Module 1

Basics: Distributed Database, Two General Problem, Byzantine General problem and Fault Tolerance, Hadoop Distributed File System, Distributed Hash Table, ASIC resistance, Turing Complete, Cryptography: Hash function, Digital Signature - ECDSA, Memory Hard Algorithm, Zero. (10 hours).

Module 2

Knowledge Proof. Blockchain: Introduction, Advantage over conventional distributed database, Blockchain Network, Mining Mechanism, Distributed Consensus, Merkle Patricia Tree, Gas Limit, Transactions and Fee, Anonymity, Reward, Chain Policy, Life of Blockchain application, Soft & Hard Fork, Private and Public blockchain. (10 hours).

Module 3

Distributed Consensus: Nakamoto consensus, Proof of Work, Proof of Stake, Proof of Burn, Difficulty Level, Sybil Attack, Energy utilization and alternate. Cryptocurrency: History, Distributed Ledger, Bitcoin protocols - Mining strategy and rewards, Ethereum - Construction, (5 hours).

Module 4

Cryptocurrency Regulation: Stakeholders, Roots of Bitcoin, Legal Aspects - Cryptocurrency Exchange, Black Market and Global Economy. (5 hours).

REFERENCE BOOKS AND ARTICLES

Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller and Steven Goldfeder, Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction, Princeton University Press (July 19, 2016).

- Wattenhofer, The Science of the Blockchain
- Antonopoulos, Mastering Bitcoin: Unlocking Digital Cryptocurrencies
- Satoshi Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System
- DR. Gavin Wood, "ETHEREUM: A Secure Decentralized Transaction Ledger," Yellow paper. 2014.
- Nicola Atzei, Massimo Bartoletti, and Tiziana Cimoli, A survey of attacks on Ethereum smart contracts

