

Block Chain Technology

Course Code	20CS4601C	Year	III	Semester	II
Course Category	PEC	Branch	CSE	Course Type	Theory
Credits	3	L-T-P	3-0-0	Prerequisites	-
Continuous Internal Evaluation :	30	Semester End Evaluation:	70	Total Marks:	100

Course Outcomes		
Upon successful completion of the course, the student will be able to		
CO1	Understand the key dimensions of Block chain Technology	L2
CO2	Apply the principles of Block chain for a given application.	L3
CO3	Apply the features of Ethereum and Hyperledger to develop various applications	L3
CO4	Analyze the given scenario and design a block chain based solution.	L4

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:Substantial, 2: Moderate, 1:Slight)														
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO1	PSO2
CO1	2													
CO2	3												2	
CO3	3												2	
CO4		3							2	2			2	

Syllabus		
Unit No.	Contents	Mapped CO
I	Blockchain 101: Distributed systems, History of Blockchain and bitcoin, Introduction to Blockchain, Merkle Trees, Tiers and Types of Blockchain, Features, Benefits and Limitations of Blockchain and Consensus Protocols	CO1,CO2
II	Decentralization: Decentralization using Blockchain, Methods of decentralization, Routes to decentralization, Blockchain and full ecosystem decentralization, pertinent Terminology	CO1,CO2,CO4
III	Cryptography and Technical Foundations: Cryptographic primitives, Asymmetric cryptography Introducing Bitcoin: Overview, Cryptographic keys, transactions, Blockchain, Mining, Digital Signatures, Wallets, Bitcoin Improvement Proposals (BIPs)	CO1,CO2,CO4
IV	Ethereum 101: Overview, The Ethereum Network, Components of the Ethereum ecosystem, The Ethereum Virtual Machine Smart Contracts: Life Cycle of a Smart Contract, Deploying Smart Contracts Gas, Tokens on Ethereum – ERC20 Token, Ethereum Improvement Proposals (EIPs), DApp and its Full Ecosystem, Operations of a DApp.	CO1,CO3,CO4
V	Hyperledger: Overview, Hyperledger Reference Architecture, Hyperledger fabric, Ripple, Storj, Multichain, BigchainDB, Quorum Blockchain-Outside of Currencies: Internet of Things, Government, Health, Finance, Media, Aviation, Voting, Identity Management, Stock Trading, Agriculture	CO1,CO3,CO4

Learning Resources
Text Book
1. Mastering Block chain - Distributed ledgers, decentralization and smart contracts explained, Imran Bashir, Third Edition, Packt Publishing Ltd.
References
1. Bitcoin and Cryptocurrency Technologies, Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller, Steven Goldfeder, Princeton University, 2016. 2. Mastering Bitcoin: Unlocking Digital Cryptocurrencies, Andreas M. Antonopoulos, First Edition, 2014, O'Reilly Media.
e-Resources and other Digital Material
1. https://www.coursera.org/specializations/blockchain 2. https://nptel.ac.in/courses/106105184/