



SOCIETY OF ST. FRANCIS XAVIER, PILAR'S
FR. CONCEICAO RODRIGUES COLLEGE OF ENGINEERING

(Approved by AICTE & Affiliated to University of Mumbai)

Fr. Agnel Ashram, Bandstand, Bandra (W), Mumbai - 400 050.

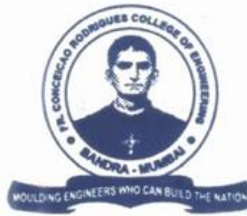
Phone : (022) 6711 4000, 6711 4101, 6711 4104

Website : www.frcrce.ac.in • Email : crce@fragnel.edu.in

Computer Engineering

(Academic Year :2023-2024)

Course Code: CSDC7022	
Course Name: Blockchain Technology Class: BE (A)	
Course Teacher: Dr. Ashok Kanthe	
Course Outcomes (CO): <i>At the End of the course students will be able to</i>	
CSDC7022.1	Explain Blockchain concepts in the context of distributed ledger.
CSDC7022.2	Associate knowledge of consensus algorithms and mining with security of blockchain.
CSDC7022.3	Apply the concepts of smart contract using Solidity programming for a given application.
CSDC7022.4	Explore Hyperledger Fabric and its working as a private blockchain.
CSDC7022.5	Explain design principles of Ethereum.
CSDC7022.6	Compare various tools of BCT using case studies.



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Course Lesson Plan

Sr. No.	Proposed Date	Actual Date	Topics	CO	Teacher's Remark	HoD's Remark
1	11-07-23		Syllabus, Introduction to COs, Introduction to blockchain, Hashing	1		
2	12-07-23		Peer-to-peer network, Merkle Tree	1		
3	13-07-23		Origin of blockchain, components of blockchain	1		
4	18-07-23		Block in blockchain, how blockchain technology works	1		
5	19-07-23		Pros and cons of BCT, Applications of BC, Types of BC	1		
6	20-07-23		Consensus Protocols: Objectives of consensus protocols, PoW, PoS, PoB, PoET	1		
7	25-07-23		Transactions in blockchain, UTXOs, Double-spending problem	2		
8	26-07-23		Cryptocurrency difficulty, Mining pools and their methods, Lifespan of a miner	2		
9	27-07-23		Cryptocurrency: wallets: Hot, cold	2		
10	01-08-23		cryptocurrency: Altcoin, Tokens: utility, security, Hybrid	2	Assignment 1	
11	02-08-23		Cryptocurrency usage: players, Ecosystem Cryptomining, Airdrop, Token or Coin burning	2		
12	03-08-23		Cryptocurrency usage: Investment and Trading, Cryptocurrency safety, Regulations around cryptocurrency	2		
13	08-08-23		Smart Contracts intro, how SC works, Types of Smart Contracts	3		
14	09-08-23		Structure of a Smart Contract, Limitations of Smart Contracts, Solidity: Functions	3		
15	10-08-23		Solidity: Fixed sized arrays, Dynamic-sized arrays Structures	3		
	15-08-23		Independence Day			
	16-08-23		Parsi New Year			
16	17-08-23		Bytes, String arrays, Memory and Storage	3		
17	22-08-23		Enum, mapping, error Handling	3		
18	23-08-23		Introduction to Public Blockchain, Ethereum and its Components	4		
19	24-08-23		Mining in Ethereum, Ethereum Virtual Machine (EVM), Transactions	4		



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	29-08-23 to 31-08-23		Unit Test-1			
20	05-09-23		Accounts, Architecture and Workflow, Comparison between Bitcoin and Ethereum	4		
21	06-09-23		Types of test-networks used in Ethereum	4		
22	07-09-23		key characteristics, Smart Contract in a Private Environment	5		
23	12-09-23		State Machine Replication, Consensus Algorithms for Private Blockchain – PAXOS	5		
24	13-09-23		RAFT algorithm, Byzantine Faults	5		
25	14-09-23		Byzantine Fault Tolerant (BFT), Practical BFT	5		
	19-09-23 to 22-09-23		Shri Ganesh Festival			
26	26-09-23		Hyperledger: Tools and frameworks	5		
27	27-09-23		Hyperledger fabric, comparison between Hyperledger fabric and other technologies	5		
	28-09-23		Anant Chaturdashi			
28	03-10-23		Hyperledger fabric architecture	5		
29	04-10-23		Components of Hyperledger Fabric: MSP, Chain Codes, Transaction Flow	5		
30	05-10-23		Working of Hyperledger Fabric, case study of Supply chain management using Hyperledger Case Study of Supply Chain Management using Hyperledger	5		
	09-10-23 to 13-10-23		Unit Test-2			
31	13-10-23		Corda, Ripple	6		
32	14-10-23		Quorum	6		
33	16-10-23		Blockchain in DeFi	6		
42	17-10-23		Remedial Session			
			University ESE Examination			



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Text books:

1. Blockchain Technology, Chandramouli Subramanian, Asha A. George, Abhillash K. A and Meena Karthikeyen, Universities Press.
2. Mastering Ethereum, Building Smart Contract and Dapps, Andreas M. Antonopoulos Dr. Gavin Wood, O'reilly.
3. Imran Bashir, Mastering Blockchain: A deep dive into distributed ledgers, consensus protocols, smart contracts, DApps, cryptocurrencies, Ethereum, and more, 3rd Edition, Packt Publishing.

Reference Books:

1. Blockchain for Beginners, Yathish R and Tejaswini N, SPD
2. Blockchain Basics, A non-Technical Introduction in 25 Steps, Daniel Drescher, Apress
3. Blockchain with Hyperledger Fabric, Luc Desrosiers, Nitin Gaur, Salman A. Baset, Venkatraman Ramakrishna, Packt Publishing

Course Instructor: Dr. Ashok M. Kanthe