

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

(Approved by AICTE & Affiliated to University of Mumbai)

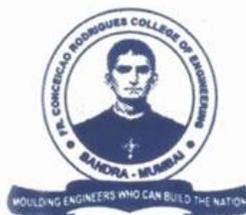
Fr. Agnel Ashram, Bandstand, Bandra (W), Mumbai - 400 050.

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

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

Computer Engineering (Academic Year :2023-2024)

Course Code: HBCC501	
Course Name: Bitcoin and Cryptocurrency Class: TE Honours V sem	
Course Teacher: Dr. Ashok Kanthe	
Course Outcomes (CO): <i>At the End of the course students will be able to</i>	
HBCC501.1	Describe the basic concept of Blockchain and its applications.
HBCC501.2	Associate knowledge of consensus and mining in Blockchain
HBCC501.3	Summarize the Bitcoin crypto currency at an abstract level.
HBCC501.4	Apply the concepts of keys, wallets and transactions in the Bitcoin Network.
HBCC501.5	Explore the Bitcoin network, nodes and their roles.



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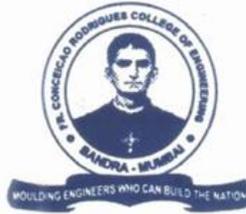
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Course Lesson Plan

Sr. No.	Proposed Date	Actual Date	Topics	CO	Teacher's Remark	HoD's Remark
1	10-07-23		Prerequisite -Cryptography, Hash function			
2	11-07-23		Public key cryptography, Digital signature			
3	12-07-23		Module 1: Introduction to blockchain- What is BT, features of BT	1		
4	13-07-23		Structure of a block, block header			
5	17-07-23		Block identifiers : block header, hash and block height			
6	18-07-23		The genesis block, linking blocks in the blockchain			
7	19-07-23		Merkle trees			
8	20-07-23		Simplified payment verification (SPV), blockchain demo.			
9	24-07-23		Module 2: consensus and Mining- Decentralized consensus, Byzantine General's problem	2		
10	25-07-23		independent verification of transactions, mining nodes		Assignment 1	
11	28-07-23		Aggregating transactions into blocks,			
12	28-07-23		Constructing the block header			
13	31-07-23		Mining the block, Validating a new block			
14	01-08-23		Assembling and Selecting Chains of Blocks			
15	04-08-23		Block chain Forks,			
16	04-08-23		study of different consensus algorithms			
17	07-08-23		Module 3: Introduction to Bitcoin- What is Bit coin and the history of Bit coin, Getting the first bit coin	3		
18	08-08-23		finding the current price of bit coin and sending and receiving bit coin			
19	11-08-23		Bit coin Transactions, Study of the coinmarket.com			
20	11-08-23		Public Key Cryptography and Crypto currency			
21	14-08-23		Module 4: Concepts of Bitcoin- Keys and addresses, Wallets and Transactions: Public Key Cryptography and Crypto currency	4		



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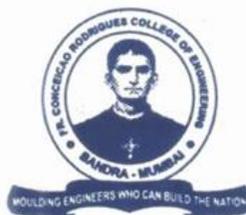
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	15-08-23		Independence Day			
	16-08-23		Parsi New Year			
22	18-08-23		Private and Public Keys, Bit coin Addresses, Base58 and Base58Check Encoding			
23	18-08-23		Nondeterministic (Random) Wallets, Deterministic (Seeded) Wallets			
24	21-08-23		HD Wallets (BIP-32/BIP-44), Wallet Best Practices, Using a Bit coin Wallets			
25	22-08-23		Transaction Fees, Transaction Scripts and Script Language			
26	25-08-23		Turing Incompleteness, Stateless Verification			
27	25-08-23		Script Construction (Lock + Unlock), Pay-to-Public-Key-Hash (P2PKH)			
	29-08-23 to 31-08-23		Unit Test-1			
28	04-09-23		Bitcoin Addresses, Balances, and Other Abstractions			
29	05-09-23		Module 5: Bitcoin Networks- Peer-to-Peer Network Architecture	5		
30	08-09-23	Node Types and Roles				
31	08-09-23	Incentive based Engineering				
32	08-09-23	The Extended Bitcoin Network				
33	11-09-23		Bitcoin Relay Networks			
34	12-09-23		Network Discovery, Full Nodes			
35	15-09-23		Exchanging “Inventory”, Simplified Payment Verification (SPV) Nodes			
36	15-09-23		Bloom Filters			
37	18-09-23		SPV Nodes and Privacy			
	19-09-23 to 22-09-23		Shri Ganesh Festival			
	28-09-23		Anant Chaturdashi			
38	29-09-23		Encrypted and Authenticated Connections,			
39	29-09-23		Transaction Pools			



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	02-10-2023		Mahatma Gandhi Jayanti			
40	03-10-23		Module 6: Blockchain applications and case studies- Domain-Specific Applications: FinTech	6		
41	06-10-23		Internet of Things, Industrial and Manufacturing, Energy,			
42	06-10-23		Supply chain & Logistics, Records & Identities, Healthcare (self-study)			
	09-10-23 to 13-10-23		Unit Test-2			
	17-10-23		Remedial Session			
			University ESE Examination			

Text books:

1. “Mastering Bitcoin, PROGRAMMING THE OPEN BLOCKCHAIN”, 2nd Edition by Andreas M. Antonopoulos, June 2017, O'Reilly Media, Inc. ISBN: 9781491954386.
2. “Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction”, July 19, 2016, by Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller, Steven Goldfeder, Princeton University Press.

Reference Books:

1. Blockchain for Beginners, Yathish R and Tejaswini N, SPD
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
4. Blockchain Basics, A non-Technical Introduction in 25 Steps, Daniel Drescher, Apress

Course Instructor: Dr. Ashok M. Kanthe