



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

Electronics and Computer Science (Academic Year :2023-2024)

Class:BE-ECS	Weekly Schedule:	
Course name/code:Blockchain technology/ECCDO702	Tuesday	8.45-9.45
Academic Year:2023-24	Thursday	8.45-9.45
Name of Teacher:Prof. Prajakta Bhangale	Friday	8.45-9.45

Course Outcomes (CO): <i>At the End of the course students will be able to</i>	
CO.1	Comprehend the pivotal role of cryptographic techniques in the features of blockchain technology.
CO.2	Apply the knowledge of public blockchain technology to solve problems.
CO.3	Explore Hyperledger Fabric and its working
CO.4	Investigate security features in blockchain technologies



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Course Lesson Plan

Sr. No.	Proposed Date	Topics	Delivery Mode	CO	Assessment Tool	Ref. book	Actual Date	Remark
1	11/7	Basic Cryptographic primitives used Blockchain - Public Key cryptosystem,	Lecture,ppts	CO1	--	T1		
2	13/7	Cryptographic Hash functions: Properties of Hash, MD5	Lecture,ppts	CO1	UT1, Q1, A1	T1		
3	14/7	SHA 256,Digital signature	Lecture,ppts	CO1	UT1, Q1, A1	T1		a
4	18/7	Cryptocurrencies: Goofy Coin and Data Structures, Hash Pointers, ECDSA, Public Keys as Identities,	Lecture,ppts	CO1	UT1, Q1, A1	T1		
5	20/7	Chapter 2: Centralization vs. Decentralization, What is Blockchain, History of Blockchain	Lecture,ppts	CO1	UT1, Q1, A1	T1		
6	21/7	Blockchain defined- peer to peer, Distributed Ledger	Lecture,ppts	CO1	UT1, Q1, A1	T1		
7	25/7	Cryptographically Secure, Append-only, Updatable via consensus,	Lecture,ppts	CO1	UT1, Q1, A1	T1		
8	27/7	How Blockchain Works, Benefits and Limitations of Blockchain,	Lecture,ppts	CO1	UT1, Q1, A1	T1		c



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9	28/7	Types of Blockchain, The Structure of a Block, Block header, Genesis block	Lecture,ppts	CO1	UT1, Q1, A1	T1		
10	1/8	Mining , Rewards, Consensus, Types of Consensus Mechanisms, Consensus in Blockchain	Lecture,ppts	CO1	UT1, Q1, A1	T1		
11	3/8	Consensus, Types of Consensus Mechanisms, Consensus in Blockchain	Lecture,ppts	CO1	UT1, Q1, A1	T1		
12	4/8	Chapter 3: What is Bitcoin, Private keys in Bitcoin, Public Keys in Bitcoin	Lecture,ppts	CO2,	UT1, Q1, A1	T1		
13	8/8	Addresses in Bitcoin, Transactions, The Bitcoin Network,Bitcoin Wallets,	Lecture,ppts	CO2	UT1, Q1, A1	T1		
14	10/8	Scripting language in Bitcoin,Bitcoin Mining- task of Bitcoin miners, Mining Hardware,	Lecture,ppts, Video	CO2	UT1, Q1, A1	T1		
15	11/8	Crypto Currencies	Lecture,ppts	CO2	UT1, Q1,A1	T1		
	15/8	Independence Day						
	16/8	Pateti holiday						
16	17/8	Anonymity and Pseudonymity in Bitcoin	Lecture,ppts	CO2	UT1, Q1,A1	T1		
17	18/8	Chapter4: Introduction to Ethereum, Ethereum's Consensus Mechanisms,	Lecture,ppts	CO2	UT2, Q2,A2	T1		
18	22/8	MetaMask Setup,Ethereum Accounts, Ethers, Gas	Lecture,Live Demonstration	CO2	UT2, Q2,A2	T1		



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19	24/8	Introduction to Smart Contracts,	Lecture	CO2	UT2, Q2,A2	T1		
20	25/8	Writing smart contracts using Solidity,Remix IDE	Lecture	CO2				
	29-31 Aug	Unit Test-1						
21	1/9	Chapter 5 What is Hyperledger? Distributed Ledger Technology & its Challenges	Lecture	CO3	UT2, Q2,A2			
22	5/9	Hyperledger & Distributed Ledger Technology	Lecture	CO3	UT2, Q2,A2	T1		
23	7/9	Remedial Session	Lecture and Quiz					
24	8/9	Hyperledger Fabric	Lecture	CO3	UT2, Q2,A2	T1,R1		
25	12/9	Hyperledger Composer,	Lecture	CO3	UT2, Q2,A2	T1,R1		
25	14/9	Transaction Flow.	Lecture	CO3				
26	15/9	Beyond Syllabus Activity based on ONLINE BLOG	Blog Reading and Quiz	CO1,C O2,CO3 ,CO4				
	19-21	Ganapati Holiday						
27	26/9	Beyond Syllabus Activity based on ONLINE BLOG	Blog Reading and Quiz	CO1,C O2,CO3 ,CO4	UT2, Q2,A2	T1		
28	29/9	Module 6: Pseudo-anonymity vs. anonymity,	Lecture,ppts	CO4	UT2, Q2,A2	T1		
	28/9	Anant Chaturdashi						
	2/10	Mahatma Gandhi Jayanti						



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29	3/10	Hyperledger Composer,	Lecture,ppts	CO3	UT2, Q2,A2	T1		
30	5/10	Transaction Flow.	Lecture,ppts	CO3	UT2, Q2,A2	T1		
31	6/10	Module 6: Pseudo-anonymity vs. anonymity,	Lecture,ppts	CO4	UT2, Q2,A2	T1		
	10/10 to 12/10	Unit Test-2						
32	13/10	Zcash and Zk-SNARKS for anonymity preservation,	Lecture,ppts	CO4	UT2, Q2,A2	T1		
33	14/10	attacks on Blockchains (Sybil attacks, selfish)	Lecture,ppts	CO4	UT2, Q2,A2	T1		
34	16/10	Prevention of attacks mining, 51% attacks),	Lecture,ppts	CO4	UT2, Q2,A2	T1		
35	17/10	Remedial Session	Lecture					
36	19/10	Flipped Classroom	Presentations					
37	20/10	Flipped Classroom	Presentations					
38	21/10	Guest Lecture						

Text Books:

- Narayanan, J. Bonneau, E. Felten, A. Miller, S. Goldfeder, “Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction”, Princeton University Press, 2016.
- Imran Bashir, “Mastering Blockchain: Distributed Ledger Technology, Decentralization and Smart Contracts Explained”, Second Edition, Packt Publishing, 2018.



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Reference Books:

- Mastering Bitcoin: Unlocking Digital Cryptocurrencies, by Andreas M Antonopoulos 2018
- D. Drescher, Blockchain Basics. Apress, 2017.
- Merunas Grinčelaitis, “Mastering Ethereum: Implement Advanced Blockchain Applications Using Ethereum-supported Tools, Services, and Protocols”, Packt Publishing.
- Blockchain with Hyperledger Fabric, Luc Desrosiers, Nitin Gaur, Salman A. Baset, Venkatraman Ramakrishna, Packt Publishing.

Course Instructor: Prof. Prajakta Bhangale