CRYPTOCURRENCY & BLOCKCHAIN DEVELOPMENT (Lab)

Course Code	Course Name	Teaching Scheme (Teaching Hours)			Credits Assigned			
		Theory	Practical	Tutorial	Theory	TW/PR	Tut	Total
NCMPCL62	Cryptocurrency & Blockchain Development Lab	-	2	-	-	1	-	1

Course Code	Course Name	Examination Scheme						
		Theory			Exam Duration (in Hrs)	Term Work	Practical & Oral	Total
		Internal Assessment		End Sem Exam				
		Mid-Term Test	Continuous Assessment					
NCMPCL62	Cryptocurrency & Blockchain Development Lab	-	-	-	-	25	-	25

Prerequisite:	
Lab Objectives	
1	To provide hands-on experience in blockchain and cryptocurrency development environments.
2	To enable students to design and deploy blockchain networks, smart contracts, and decentralized applications (DApps).
3	To enhance skills in integrating cryptocurrency wallets and exchanges into applications securely.
4	To foster problem-solving and innovation in blockchain technology applications through practical experimentation.
Lab Outcomes	
1	Configure and manage blockchain networks using popular platforms.
2	Design and implement smart contracts for various use cases.
3	Develop and deploy decentralized applications (DApps) on blockchain platforms.
4	Integrate cryptocurrency wallets and secure transactions effectively.
5	Analyze and optimize blockchain-based systems for performance and scalability.
6	Evaluate the practical implications of blockchain security and compliance requirements.

Suggested Experiments: Students are required to complete at least 10 experiments.		
Star (*) marked experiments are compulsory.		
Sr. No	**List the Experiment**	**LOs**
1*	Explore the Cryptocurrency Landscape	LO5
2*	Cryptography in Blockchain, Merkle root tree hash	LO6
3*	Create a Blockchain using Python	LO1
4*	Create a Crypto Currency using Python for the blockchain implemented in Experiment No. 3 and create a network of nodes.	LO1, LO4
5*	Hands on Solidity Programming Assignments for creating Smart Contracts	LO2
6	Deploying a Voting/Ballot Smart Contract in Remix IDE	LO2, LO3
7*	Creating a Token (ERC-20) in Remix IDE	LO2
8*	Building a web based Decentralized Application (DApp) using Truffle suite	LO3
9*	Configuring a Cryptocurrency Wallet using Metamask and integrating it with a DApp.	LO4
10*	Simulating Blockchain Transactions using Ganache to simulate transactions and observe block creation.	LO1, LO5
11	Implement a Private Ethereum Blockchain using Geth	LO1, LO5

Useful Links	
1	https://www.lfdecentralizedtrust.org/
2	https://ethereum.org/en/
3	https://coinmarketcap.com/coins/
Tools and Articles	
1	https://archive.trufflesuite.com/
2	https://remix.ethereum.org/
3	https://metamask.io/

4	https://archive.trufflesuite.com/ganache/

Term Work	
1	Term work should consist of 10 experiments.
2	The final certification and acceptance of term work ensures satisfactory performance of laboratory work and minimum passing marks in term work.
3	Total 25 Marks (Experiments: 15-marks, Attendance: 5-marks, Assignment: 5-marks)