**LESSON PLAN**

**(PVPSIT/ACD/01)**

**ACADEMIC YEAR : 2024-25**

**SUBJECT CODE & NAME : Blockchain Technology (20CS4601C)**

**YEAR & SEMESTER : III B. Tech / II Semester / S1 / PVP20 Regulations**

**FACULTY NAME : Dr. M. Sailaja**

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| **CO** | **COURSE OUTCOMES** | **LEVEL** |
| **CO1** | **Understand** the key dimensions of Blockchain 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** |

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| **Unit No** | **Topic of Syllabus to be covered** | **Learning outcomes** | **Course Outcomes And Cognitive Levels** | **Teaching Mode** | **Hours Required** | **Total No. of Hours**  **(Cumulative)** | **Expected date of completion (for each unit)** | **Review / Remarks**  **(By HOD)** |
| **L/T** |  |  |  | |
| 0 | Academic rules and regulations of PVP20.  Program Objectives  Course Objectives, Course Outcomes  Text Books  e-Resources | | | LCD | 1 | 1 |  |  | |
| I | Distributed systems | Understand the basic concepts of distributed systems. | CO1-L2 | LCD | 1 | 2 |  |  | |
| I | History of Blockchain and bitcoin | Understand the history of blockchain and Bitcoin. | CO1-L2 | LCD | 1 | 3 |  |  | |
| I | Introduction to Blockchain | Understand the definition of Blockchain Technology**.** | CO1-L2 | LCD | 1 | 4 |  |  | |
| I | Merkle Trees | Understand the concept of Merkle Tree and Construct Merkle tree for given problem. | CO1-L2  CO2-L3 | LCD | 1 | 5 |  |  | |
| I | Tiers and Types of Blockchain, Features | Understand Blockchain types and features. | CO1-L2 | LCD | 1 | 6 |  |  | |
| I | Benefits and Limitations of Blockchain | Understand the Benefits and Limitations of Blockchain. | CO1-L2 | LCD | 1 | 7 | 27/12/24 |  | |
| II | Decentralization: Decentralization using Blockchain | Understand how decentralization is achieved using blockchain**.** | CO1-L2 | LCD | 1 | 8 |  |  | |
| II | Methods of decentralization, | Understand the Methods of decentralization. | CO1-L2 | LCD | 1 | 9 |  |  | |
| II | Routes to decentralization | Understand and identify the routes to decentralization. | CO1-L2  CO2-L3 | LCD | 1 | 10 |  |  | |
| II | Blockchain and full ecosystem decentralization | Understand the working of Blockchain and examine the functionalities helpful in protecting data of a given application. | CO1-L2  CO4-L4 | LCD | 1 | 11 |  |  | |
| II | Pertinent Terminology | Understand the terminology used in Blockchain Technology**.** | CO1-L2 | LCD | 1 | 12 | 08/01/25 |  | |
| III | Cryptography and Technical Foundations: Cryptographic primitives | Understand the Cryptographic primitives constrained to Blockchain Technology. | CO1-L2 | LCD | 1 | 13 |  |  | |
| III | Asymmetric cryptography | Understand the concepts of Asymmetric cryptography and make use of it in a Blockchain system**.** | CO1-L2  CO2-L3 | LCD | 1 | 14 | 10/01/25 |  | |
| III | Introducing Bitcoin: Overview | Understand the working of Bitcoin. | CO1-L2 | LCD | 1 | 15 |  |  | |
| III | Cryptographic keys | Understand the usage of Cryptographic keys in Blockchain Technology. | CO1-L2 | LCD | 1 | 16 |  |  | |
| III | Transactions | Understand how transactions are done in bitcoin. | CO1-L2  CO3-L3 | LCD | 1 | 17 |  |  | |
| III | Blockchain Mining | Understand the process of mining in bitcoin and identify the better consensus algorithm for mining. | CO1-L2  CO2-L3 | LCD | 1 | 18 |  |  | |
| III | Digital Signatures | Understand the concept of Digital Signatures. | CO1-L2 | LCD | 1 | 19 |  |  | |
| III | Wallets | Understand the concept of Wallets. | CO1-L2 | LCD | 1 | 20 |  |  | |
| III | Bitcoin Improvement  Proposals (BIPs) | Identify the additional functionalities needed for Bitcoin Improvement. | CO1-L2  CO2-L3 | LCD | 1 | 21 | 07/02/25 |  | |
| IV | Ethereum 101: Overview,  Operations of a DApp, | Understand the operations performed by DApp. | CO1-L2 | LCD | 1 | 22 |  |  | |
| IV | The Ethereum Network, | Understand the main, test and private nets of Ethereum Network. | CO1-L2 | LCD | 1 | 23 |  |  | |
| IV | Components of the Ethereum ecosystem, | Understand the Components of the Ethereum ecosystem. | CO1-L2  CO3-L3 | LCD | 1 | 24 |  |  | |
| IV | Smart Contracts: Life Cycle of a Smart Contract. | Understand the Life cycle of smart contracts. | CO1-L2 | LCD | 1 | 25 |  |  | |
| IV | Deploying Smart Contracts | Develop a smart contract for a given application. | CO3-L3  CO4-L4 | LCD | 1 | 26 |  |  | |
| IV | Gas, Tokens on Ethereum – ERC20 Token, | Make use of smart contracts to understand gas calculation and ERC 20 Token**.** | CO1-L2  CO3-L3 | LCD | 1 | 27 |  |  | |
| IV | Ethereum Improvement Proposals (EIPs), | Identify the additional functionalities needed for Ethereum Improvement. | CO1-L2  CO3-L3 | LCD | 1 | 28 |  |  | |
| IV | DApp and its Full Ecosystem, | Understand the DApp ecosystem and develop a DApp for a given application**.** | CO1-L2  CO3-L3  CO4-L4 | LCD | 1 | 29 |  |  | |
| IV | Operations of a DApp | Understand the Operations of a DApp and develop a DApp for a given application**.** | CO1-L2  CO3-L3  CO4-L4 | LCD | 1 | 30 | 28/02/25 |  | |
| V | Hyperledger: Overview Hyperledger Reference Architecture | Understand the Hyperledger Reference Architecture | CO1-L2 | LCD | 1 | 31 |  |  | |
| V | Hyperledger: Overview Hyperledger Reference Architecture | Examine in which scenario Hyperledger platform can be used. | CO4-L4 | LCD | 1 | 32 |  |  | |
| V | Hyperledger fabric | Understand the Hyperledger Fabric and develop an application. | CO1-L2  CO3-L3 | LCD | 1 | 33 |  |  | |
| V | Ripple, Storj Multichain, BigchainDB | Understand the functionality of Ripple, Storj, Multichain, BigchainDB**.** | CO1-L2 | LCD | 1 | 34 |  |  | |
| V | Quorum  Blockchain | Understand the functionality and examine the applications that can be developed using Quorum Blockchain. | CO1-L2  CO4-L3 | LCD | 1 | 35 |  |  | |
| V | Outside of Currencies: Internet of Things | Analyze how blockchain is used in IoT. | CO4-L3 | LCD | 1 | 36 |  |  | |
| V | Government, Health | Analyze how blockchain can be used in development of Government, Health Applications. | CO4-L3 | LCD | 1 | 37 |  |  | |
| V | Finance, Media, Aviation. | Analyze how blockchain can be used in development of Finance, Media and Aviation Applications. | CO4-L3 | LCD | 1 | 38 |  |  | |
| V | Voting, Identity Management | Analyze how blockchain can be used in developmentof Voting and Identity Management. | CO4-L3 | LCD | 1 | 39 |  |  | |
| V | Stock Trading, Agriculture | Analyze how blockchain can be used in developmentof Stock Trading and Agriculture**.** | CO4-L3 | LCD | 1 | 40 |  |  | |
|  | CASE STUDY | Application building using Solidity. | CO4-L3 |  | 4 | 44 | 22/03/25 |  | |
|  | Challenges and Latest updates in Blockchain | Webinar/Guest Lecture by Industry Expert. |  |  | 1 | 45 |  |  | |

Legend: Teaching mode: LCD: Power Point Presentation L: Lecture Hours T: Tutorial Hours

**Signature of Faculty Signature of HoD**