Block Chain

Course code: 19IS7DEBLC **Credits: 03**
L:P:T:S: 3:0:0:0 **CIE Marks:50**
Exam Hours: 03 **SEE Marks: 50**
Total Hours 03
Course Objectives:

1. Understand the basic principles of Blockchain technology
2. Understand the methods and platforms used in Blockchain
3. To be familiar with the first and the largest Blockchain - Bitcoin
4. Understand Blockchain Smart Contracts
5. To become familiar with the alternative Blockchains like Ethereum
6. To learn the Blockchain development tools and Frameworks

Course Outcomes: After completion of the course, the graduates will be able to:

CO1	Comprehend the basic principles of Blockchain technology
CO2	Understand the Blockchain methods and platforms
CO3	Build familiarity with Blockchains like Bitcoin
CO4	Learn and Understand Smart Contracts
CO5	Understand alternative Blockchains like Ethereum
CO6	Learn BlockChain Developoment tools and frameworks

Mapping of Course outcomes to Program outcomes:

	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO1	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-
CO2	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-
CO3	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-
CO4	3	2	2	-	-	-	-	-	-	-	-	-	-	-	1
CO5	3	2	2	-	-	-	-	-	-	-	-	-	-	-	1
CO6	3	2	2	-	3	-	-	-	-	-	-	-	-	-	1

Unit.	Content of the Unit	Hours	COs
1.	**Blockchain (BC) 101:** Introduction, Distributed Systems, History of BC and Bitcoin – Electronic cash, BlockChain, Generic Elements of BC, Benefits and limitations of BC, Tiers and Features of BC, Types of BC, Consensus **Decentralization:** Decentralization using BC, Methods of decentralization, Routes to decentralization, BC and ecosystem decentralization, Smart Contracts, Decentralized Organizations, Platforms for decentralization	6	CO1, CO2
2.	**Introducing Bitcoin:** Bitcoin, Digital keys and addresses, Transactions, Blockchain, Mining **Bitcoin Network and Payments:** The Bitcoin network, Wallets, Bitcoin payments, Innovation in Bitcoin,	9	CO3
3.	**Smart Contracts:** History, Definition, Ricardian Contracts, - Smart Contract templates, Oracles, Smart Oracles, Deploying smart contracts on a BC. The DAO	9	CO4
4.	**Ethereum 101:** Introduction, Ethereum bird's eyeview, The Ethereum network, Components of the Ethereum ecosystem, Ether Cryptocurrency, The Ethereum VM (EVM), Smart Contracts.	8	CO5
5.	**Development Tools and Framework:** Languages, Solidity Language **HyperLedger:** Hyperledger – Fabric, Reference architecture, Services. **Alternative Blockchains**: Blockchains, **Blockchain** - Outside of Currencies	8	CO6

Self Study Component:

1. Bitcoin Clients and API – Setup the bitcoin.

2. Hash functions, public key cryptography, digital signatures

3. Platforms and frameworks

TEXT BOOK:

1. Imran Bashir, "Mastering Blockchain", 2nd edition, Packt Publishing Company, 2018

REFERENCE BOOKS:

1. Narayan Prusty, "Building BlockChain Projects", Packt Publishing Company, 2017.

2. Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller, And Steven Goldfeder, "Bitcoin and Cryptocurrency Technologies", A Comprehensive Introduction, Princeton University Press.