UEC635 BLOCKCHAIN TECHNOLOGY

L	T	P	Cr
2	0	2	3.0

Course Objective:

This course covers the conceptual and application aspects of fast growing and latest technology Blockchain. The popularity of digital cryptocurrencies has led the foundation of Blockchain, it is a public digital ledger which share the information in a secure way. The various applications of Blockchain are business process management, smart contracts, IoT and so on. In this course fundamental design and architectural primitives of Blockchain, the system and the security aspects will be covered.

Syllabus break-up:

Introduction to Blockchain: Blockchain Theory, Immutable Ledger, Smart Networks, Cryptographic Wallets, Blockchain Global Peer to peer software network, Cryptocurrency, Bitcoin mining, Bitcoin scalability, Blockchain risks: Technical, Regulatory, Perception, Payment networks, Blockchain applications, Decoupling Decision-making and Automated execution, Smart Contracts: Bitcoin, Ethereum.

Hyperledger Fabric: Transaction flow, details, membership, identity management, hyperledger composer, application development and network administration,

Blockchain use cases: Blockchain Consensus Algorithms, Byzyantine Fault Tolerance, Applications in finance, supply chain, other industries and Government.,

Miscellaneous: Alt Coins, Ripple, Neo, Litecoin, Cardano, Stellar, Blockchain security and research aspects.

Laboratory Work: Pre-requisite for basics of Blockchain**,** Create a blockchain using Python, Create a cryptocurrency using Python, Create a Smart Contract using Python, Implementation and testing of hyperledger, execution and understanding of bitcoin, implementation, concepts and exposure to blockchain using any language. Modelling, designing and testing of application specific project and research papers.

Course Learning Outcomes (CLO):

The student will be able to:

1. Understand the architecture and basics of the Blockchain.
2. Know the use of digital currency and consensus of Bitcoin.
3. Deal with the digital ledger and can describe the hyperledger.
4. Use Blockchain in various applications.

Text Books:

1. Arvind N., Joseph B., Edward F., Andrew M., and Steven G., "Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction", Princeton University Press, ISBN-13: 978-0691171692.
2. Henning D., and Create S., "Ethereum: Blockchains, Digital Assets, Smart Contracts, Decentralized Autonomous Organizations" Independent Publishing Platform, ISBN-13: 978-1523930470.

Reference Books:

1. Arshdeep B., and Vijay M. "Blockchain Applications: A Hands-on Approach", Vpt, ISBN-13: 978-0996025560.
2. Roger W. "The Science of the Blockchain", Create Space Independent Publishing Platform, 2016, ISBN-978-1522751830

Evaluation Scheme:

Sr. No.	Evaluation Elements	Weightage (%)
1	MST	25
2	EST	45
3	Sessional (May include Assignments/Projects/Tutorials/Quizzes/Lab Evaluations)	30