FUNDAMENTALS OF BLOCK CHAIN TECHNOLOGY

(Professional Elective –V)

Course Code	20IT4703A	**Year**	IV	**Semester**	I
Course Category	PE 5	**Branch**	IT	**Course Type**	Theory
Credits	3	**L-T-P**	3-0-0	**Prerequisites**	Computer Networks
Continuous Internal Evaluation :	30	**Semester End Evaluation:**	70	**Total Marks:**	100

Course Outcomes		
Upon successful completion of the course, the student will be able to		
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**

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:Substantial, 2: Moderate, 1:Slight)

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

Syllabus		
Unit No.	**Contents**	**Mapped CO**
I	**Blockchain 101:** Distributed systems, History of Blockchain and bitcoin, Introduction to Blockchain, Consensus, CAP theorem and Blockchain.	**CO1,CO2**
II	**Decentralization**: Decentralization using Blockchain, Methods of decentralization, Routes to decentralization, Blockchain and full ecosystem decentralization, pertinent Terminology.	**CO1,CO2,CO4**
III	**Cryptography and Technical Foundations:** Cryptographic primitives, Asymmetric cryptography, Cryptographic constructs and Blockchain technology **Introducing Bitcoin**: Overview, Cryptographic keys, transactions, Blockchain, Mining.	**CO1,CO2,CO4**
IV	**Ethereum 101:**Overview,The Ethereum Network, Components of the Ethereum ecosystem, The Ethereum Virtual Machine **Smart Contracts:** Definition, Ricardian Contracts, Smart Contract Templates, Oracles, Deploying Smart Contracts	**CO1,CO3,CO4**
V	**Hyper ledger:** Overview, Hyper ledger Reference Architecture, Hyperledger fabric Blockchain-Outside of Currencies: Internet of Things, Government, Health, Finance, Media.	**CO1,CO3,CO4**

Learning Resources
Text Book
1.Mastering Block chain - Distributed ledgers, decentralization and smart contracts explained, Imran Bashir, Third Edition, Packt Publishing Ltd.
References
1.Bitcoin and Crypto currency Technologies, Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller, Steven Gold feder, Princeton University, 2016. **2**. Mastering Bitcoin: Unlocking Digital Crypto currencies, Andreas M. Antonopoulos, First Edition, 2014, O'Reilly Media.
e-Resources and other Digital Material
1. https://www.coursera.org/specializations/blockchain 2. https://nptel.ac.in/courses/106105184/