Block Chain Technology

Course Code	20CS4601C	**Year**	III	**Semester**	II
Course Category	PEC	**Branch**	CSE	**Course Type**	Theory
Credits	3	**L-T-P**	3-0-0	**Prerequisites**	-
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 Block chain 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)

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3													
CO2														3
CO3														3
CO4									1	1				2

Syllabus		
Unit No.	**Contents**	**Mapped CO**
I	**Block chain 101:** Distributed systems, History of Block chain and bitcoin, Introduction to Block chain, Consensus, CAP theorem and Block chain.	**CO1,CO2**
II	**Decentralization:** Decentralization using Block chain, Methods of decentralization, Routes to decentralization, Block chain and full ecosystem decentralization, pertinent Terminology.	**CO1,CO2,CO4**
III	**Cryptography and Technical Foundations:** Cryptographic primitives, Asymmetric cryptography, Cryptographic constructs and Block chain 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	**Hyperledger:** Overview, Hyperledger 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 Cryptocurrency Technologies, Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller, Steven Goldfeder, Princeton University, 2016. **2.** Mastering Bitcoin: Unlocking Digital Cryptocurrencies, 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/