

UNIVERSITY OF MADRAS

B.Sc. DEGREE PROGRAMME IN COMPUTER SCIENCE

SYLLABUS WITH EFFECT FROM 2023-2024

Year: III

Semester: VI

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| Block Chain Technology | 325E6F |
| Credits 3 | Lecture Hours:5 per week |
| Learning Objectives: (for teachers: what they have to do in the class/lab/field) <ul style="list-style-type: none">To understand the concepts of block chain technologyTo understand the consensus and hyper ledger fabric in block chain technology. | |
| Course Outcomes: (for students: To know what they are going to learn) <ol style="list-style-type: none">State the basic concepts of block chainParaphrase the list of consensus and Demonstrate and Interpret working of Hyper ledger FabricImplement SDK composer tool and explain the Digital identity for government | |

| Units | Contents |
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| I | History: Digital Money to Distributed Ledgers -Design Primitives: Protocols, Security, Consensus, Permissions, Privacy- : Block chain Architecture and Design-Basic crypto primitives: Hash, Signature Hash chain to Block chain-Basic consensus mechanisms. |
| II | Requirements for the consensus protocols-Proof of Work (PoW)-Scalability aspects of Block chain consensus protocols: Permissioned Block Chains-Design Goals-Consensus protocols for Permissioned Block chains. |
| III | Decomposing the consensus process-Hyper ledger fabric components-Chain code Design and Implementation: Hyper ledger Fabric II:-Beyond Chain code: fabric SDK and Front End-Hyper ledger composer tool. |
| IV | Block chain in Financial Software and Systems (FSS): -Settlements, -KYC, -Capital Markets-Insurance Block chain in trade/supply chain: Provenance of goods, visibility, trade/supply chain finance, invoice management/discounting. |
| V | Block chain for Government: Digital identity, land records and other kinds of record keeping between government entities, public distribution system / social welfare systems: Block chain Cryptography: Privacy and Security on Block chain. |

TEXT BOOKS:

1. Mark Gates, "Block chain: Ultimate guide to understanding block chain, bit coin, crypto currencies, smart contracts and the future of money", Wise Fox Publishing and Mark Gates 2017.
2. Salman Baset, Luc Desrosiers, Nitin Gaur, Petr Novotny, Anthony O'Dowd, Venkatraman Ramakrishna, "Hands-On Block chain with Hyper ledger: Building decentralized applications with Hyperledger Fabric and Composer", 2018.
3. Bahga, Vijay Madiseti, "Block chain Applications: A Hands-On Approach", Arshdeep Bahga, Vijay Madiseti publishers 2017.