COURSE TITLE	**BLOCKCHAIN APPLICATIONS**
COURSE CODE	**04MB0232**
COURSE CREDITS	**2**

Course Outcomes: After completion of this course, student will be able to:

1. Apply core concepts of Blockchain technology to real-world scenarios across finance, supply chain, and governance sectors.
2. Analyze the differences between public, private, and consortium blockchains, evaluating their applicability in various domains.
3. Demonstrate the use of smart contracts for automating decentralized applications on platforms like Ethereum
4. Implement basic cryptographic techniques such as hashing and digital signatures in a blockchain context.
5. Compare and evaluate Blockchain development frameworks such as Ethereum and Hyperledger for enterprise-level application development.

Pre-requisite of course: Basics of computer systems and operating systems

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
2	0	0	0	30	20	50	0

Contents : Unit	Topics	Contact Hours
1	**Basics of Blockchain** Definition of Blockchain, Scope of Blockchain in Business, Difference between Blockchain and Traditional Databases, Key Features of Blockchain: decentralization, transparency, immutability, security, Types of Blockchain: public, private, consortium, Introduction to Security in Blockchain: use of digital keys and codes, Importance of Blockchain in Business Transactions: trust, safety, tamper-resistance.	10
2	**Smart Contracts and Blockchain Platforms** Concept of Smart Contracts, Benefits and applications of Smart Contracts in business, Introduction to Ethereum platform, Basic concepts of Ethereum: gas, wallets, transactions (non-technical), Overview of Solidity (concept only, no coding), Introduction to Hyperledger Fabric, Features of Hyperledger: permissioned access, modular architecture, Comparison between Ethereum and Hyperledger: use cases, business relevance	10

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Contents : Unit	Topics	Contact Hours
3	**Applications of Blockchain in Business** Blockchain in Supply Chain Management: tracking, transparency, trust, Blockchain in Healthcare: secure sharing, patient privacy, Blockchain in Education: digital certificates, verification, Introduction to NFTs and their business relevance, Basics of Decentralized Finance (DeFi), Blockchain for Digital Identity and authentication, Case studies of blockchain adoption in companies	10
Total Hours		**30**

Textbook :

1 Mastering Blockchain: Deeper insight into decentralization, cryptography, Bitcoin and popular Blockchain frameworks, Imran Bashir, Packt, 2021

2 Blockchain Basics: A Non-Technical Introduction in 25 Steps, Daniel Drescher, Apress, 2020

References:

1 Blockchain Applications: A Hands-On Approach, Blockchain Applications: A Hands-On Approach, Arshdeep Bahga, Vijay Madisetti, VPT, 2021

2 Blockchain Technology: Concepts and Applications, Blockchain Technology: Concepts and Applications, S. Udhayakumar, R. Natarajan, CRC Press, 2023

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
0.00	0.00	25.00	30.00	25.00	20.00

Instructional Method:

1 Interactive lectures, Case study–based learning, Hands-on lab sessions, Demonstration of blockchain platforms and tools, Problem-based learning, Project-based learning, Simulation and role-play, Industry use-case discussions, Guest lectures from industry experts, Workshops and bootcamps, Group discussions and peer learning, Flipped classroom approach, Self-learning through MOOCs and research articles, Assignments and mini-projects, Capstone or live project exposure

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