

COURSE TITLE	DECENTRALIZED FINANCE
COURSE CODE	04CH0412
COURSE CREDITS	3

Objective:

- 1 NA

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

- 1 Understand the architecture and components of DeFi with real-world Indian use cases.
- 2 Analyze how DeFi protocols like lending, trading, and stablecoins function, and their role in financial inclusion in India.
- 3 Evaluate the impact of blockchain-based DeFi platforms in the Indian regulatory environment.
- 4 Develop competence in using wallets, DApps, and DeFi tools through simulations.
- 5 Examine the current and future integration of DeFi with India's financial infrastructure

Pre-requisite of course:NA

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
3	0	0	50	50	0	0	0

Contents : Unit	Topics	Contact Hours
1	Foundations of Decentralized Finance Evolution of Finance: From Centralized to Decentralized Models; Architecture of DeFi: Blockchain, Smart Contracts, Peer-to-Peer Protocols; Traditional vs. Decentralized Finance; Role of Ethereum and Layer-2 Solutions; Case Study: India's shift towards digital financial infrastructure (e.g., UPI, JAM Trinity)	9
2	DeFi Ecosystem and Protocols DeFi Lending & Borrowing (e.g., Aave, Compound); Decentralized Exchanges (DEXs): Uniswap, Sushiswap; Indian Crypto Exchanges: CoinDCX, WazirX, and their DEX initiatives; Stablecoins: DAI, USDT, INR-pegged stablecoins and their regulatory issues; Oracles (Chainlink) and Cross-chain Protocols; DeFi Analytics Platforms: DeFi Pulse, DappRadar	9

Contents : Unit	Topics	Contact Hours
3	Tools and Applications with Indian Focus Wallets: Metamask, Trust Wallet – simulation with test networks; Using DeFi platforms on testnets (Ethereum Goerli, Polygon Mumbai); Yield Farming, Staking, and Liquidity Mining – risks and rewards; Token Standards (ERC-20, ERC-721) and India’s NFT adoption; Simulation: Creating & interacting with DeFi apps in sandbox environments; Case Study: Use of blockchain by Indian agri-finance startups	9
4	Risk, Security & Governance in DeFi Smart Contract Risks, Flash Loan Attacks, Code Exploits; Governance Mechanisms: DAOs – Constitution DAO, MakerDAO; India's Cybersecurity Framework (CERT-In) and DeFi Vulnerabilities; Rug Pulls and Regulatory Arbitrage; Case Studies: Poly Network Hack, Terra-LUNA, Vault Crisis in India; Role of auditing firms (Quantstamp, Certik) in DeFi	9
5	DeFi Policy, Regulation, and India's Road Ahead RBI’s position on cryptocurrencies and digital assets; Finance Act 2022: Crypto taxation, TDS, and reporting; Legal framework under FEMA, PMLA, and IT Act for DeFi in India; RBI’s Central Bank Digital Currency (CBDC) and its potential interaction with DeFi; Future of DeFi in India: Web3 startups, Regulatory Sandbox, GIFT City FinTechs; Global vs. Indian regulatory perspectives: FATF, SEBI, and Indian Supreme Court judgment	9
Total Hours		45

Textbook :

- 1 Token Economy: How Blockchains and Smart Contracts Revolutionize the Economy, Shermin Voshmgir , Token Kitchen, 2020
- 2 Mastering DeFi, Kris Kaczor & Henrique Centieiro , Independently Published, 2021
- 3 DeFi and the Future of Finance, Campbell R. Harvey, Ashwin Ramachandran, Joey Santoro, Wiley, 2021

References:

- 1 Bitcoin and Cryptocurrency Technologies, Bitcoin and Cryptocurrency Technologies, Narayanan, Arvind et al., Princeton University Press, 2021

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
10.00	20.00	40.00	15.00	15.00	0.00

Instructional Method:

- 1 LECTURE

Supplementary Resources:

- 1 <https://ethereum.org/en/defi/>
- 2 <https://defipulse.com/>
- 3 <https://cryptobharat.org/>