Elective Course 2: Fintech

Course Type:	PS: Program Specialisation	Course Credits:	2
Course Code:	F3PE510	Course Duration:	30 Hours

Course Objective:

- To provide foundational knowledge of emerging financial technologies, including AI, Machine Learning, Big Data, RPA, and IoT.
- To familiarize students with blockchain fundamentals, cryptographic techniques, smart contracts, and blockchain types.
- To analyze the practical applications of blockchain technology and cryptocurrencies in financial services.
- To critically evaluate regulatory, ethical, and cybersecurity considerations associated with blockchain and digital assets.
- To develop practical insights into real-world innovations through case studies involving blockchain, AI, and machine learning in finance.

Course Outcomes:

- CO1: Explain and apply the core concepts of emerging technologies such as Artificial Intelligence (AI), Machine Learning (ML), Big Data, Robotic Process Automation (RPA), and Cloud Computing in banking and financial services.

- CO2: Describe the structure, types, and technical foundations of Blockchain technology, including cryptographic techniques, smart contracts, and the distinction between public, private, and consortium blockchains.

- CO3: Analyze the applications of blockchain and cryptocurrencies in finance, including decentralized finance (DeFi), NFTs, tokenization, trade finance, and cross-border transactions.

- CO4**:** Evaluate regulatory frameworks, cybersecurity concerns, and ethical issues associated with the use of digital assets, AI, and blockchain technologies, including developments in CBDCs and Web3 innovations

- CO5: Develop insights into real-world financial innovations through case studies and practical applications of blockchain, AI, and ML in risk management, fraud detection, and financial operations.

Unit / Module	Content	CO Mapping	Hours Assigned
1	Introduction to Emerging Technologies in Finance Evolution of Financial Technologies (FinTech), Applications of Artificial Intelligence (AI), Machine Learning (ML), and Big Data in Finance, Robotic Process Automation (RPA) in Banking & Financial Services, Internet of Things (IoT) and Cloud Computing in Financial Services, Open Banking APIs and Embedded Finance. **Use Cases of FinTech Startups** (e.g., Cred, Paytm, Upstox) to demonstrate real-life applications.	CO1,CO5	6
2	Fundamentals of Blockchain Technology, Concept, Characteristics, and Key Components of Blockchain, Type of Blockchains: Public, Private, and Consortium,Smart Contracts: Features and Use cases, Cryptographic Techniques and Hashing in Blockchain, Limitations of Blockchain (e.g., scalability, energy use)	CO2, CO3	6
3	Blockchain Applications in Finance, Cryptocurrencies: Bitcoin, Ethereum, and Beyond, Decentralized Finance (DeFi) and Peer-to-Peer Lending, Tokenization of Assets and Non- Fungible Tokens (NFTs), Blockchain in Trade Finance, Cross-Border Payments, and Supply Chain, Stablecoins and their role in CBDCs.	CO2, CO3,CO5	6
4	Regulatory and Ethical Considerations, Legal and Regulatory Framework for Blockchain and Digital Assets - **India-specific regulatory landscape** (e.g., RBI's stance on digital assets, DPDP Act	CO1,CO2, CO4	6

	2023); **Comparative global regulatory practices** (EU's MiCA, US SEC/FinCEN updates) Data Security, Privacy, and Cybersecurity Challenges, Ethical Implications of AI and Blockchain in Finance -: fairness in credit scoring, algorithmic bias, explainability. Future Trends: Central Bank Digital Currencies (CBDCs) and Web3		
5	Case Studies and Practical Applications - Successful Implementations of Blockchain in Banking & Financial Services; Use Cases of AI & ML in Risk Management and Fraud Detection, Discussion on Emerging Trends and Innovations in Financial Technology.	CO1,CO3, CO5	6

Textbooks:

1. Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction, by Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller & Steven Goldfeder, Publisher: Princeton University Press
2. Fintech: The New DNA of Financial Services, by Pranay Gupta & T. Mandy Tham, World Scientific

Reference Books:

1. Fintech Law in a Nutshell, by Chris Brummer, West Academic Publishing
2. Blockchain Babel: The Crypto-Craze and the Challenge to Business, by Igor Pejic, Kogan