Undergraduate Certificate in Fintech and Digital Lending

Digital Payment Systems

ACH
Related terms: direct deposit, wire transfer
A network that processes batch payments electronically between banks. It enables low-cost recurring transactions such as payroll and utility bills. Example: an employer uses ACH to deposit salaries directly into employee accounts. Challenges include slower settlement times compared to real-time payments and occasional failed debits due to insufficient funds.

API
Related terms: SDK, webhooks
Application Programming Interface that allows developers to connect their software with payment platforms. APIs expose functions for initiating transactions, checking status, and handling refunds. Example: an e-commerce site integrates a payment gateway via REST API to accept credit cards. Challenges involve versioning, security of authentication keys, and handling rate limits.

Authentication
Related terms: 2FA, biometrics
The process of verifying a user's identity before allowing access to a payment service. Methods include passwords, one-time codes, and fingerprint scans. Example: a mobile wallet requires a fingerprint and a PIN before a transfer. Challenges include balancing friction against fraud prevention and accommodating users with accessibility needs.

Authorization
Related terms: approval, capture
The step where a payment network confirms that the payer has sufficient funds or credit to complete a transaction. In card payments, an authorization hold reserves the amount. Example: a hotel pre-authorizes $200 on a guest's card at check-in. Challenges arise from delayed captures, double-authorizations, and differing rules across jurisdictions.

Bank Transfer
Related terms: wire, SWIFT
Movement of funds directly from one bank account to another, typically initiated through online banking or a third-party platform. Example: a user sends money to a friend's account using their bank's mobile app. Challenges include varying fees, processing times that can exceed 24 hours, and limited cross-border interoperability.

Blockchain

Related terms: cryptocurrency, distributed ledger
A decentralized ledger technology that records transactions across a network of computers. It can be used for peer-to-peer payments without intermediaries. Example: a user transfers stablecoins to another user, with the transaction recorded on a public blockchain. Challenges involve scalability, regulatory uncertainty, and volatility of native tokens.

Chargeback
Related terms: dispute, reversal
A consumer-initiated reversal of a card transaction, typically due to fraud or merchant error. The issuing bank refunds the cardholder and debits the merchant. Example: a shopper disputes a fraudulent online purchase and receives a chargeback. Challenges include merchant losses, lengthy investigation processes, and potential for abuse.

Clearing
Related terms: settlement, netting
The process of reconciling payment instructions and determining the net obligations of each participant before funds are transferred. Example: a batch of ACH transactions is cleared overnight, producing a net amount for each bank. Challenges include handling high volumes, ensuring data integrity, and meeting regulatory reporting deadlines.

Contactless Payment
Related terms: NFC, tap-to-pay
A method of paying by waving or tapping a card or device near a reader, using near-field communication. Example: a commuter taps a smartphone at a transit gate. Challenges involve security of tokenization, merchant adoption of compatible terminals, and limits on transaction amounts.

Cryptocurrency
Related terms: bitcoin, token
Digital assets that use cryptographic techniques to secure transactions and control the creation of new units. They can be transferred directly between users without intermediaries. Example: a user purchases goods using Ethereum. Challenges include price volatility, regulatory scrutiny, and the need for user education on custodial security.

Customer-to-Business (C2B) Payments
Related terms: invoice, payment gateway
Transactions where individuals pay businesses for goods or services, typically via digital channels. Example: a freelancer receives payment through an online invoicing platform. Challenges involve ensuring timely receipt, handling cross-border fees, and providing reconciliation data for accounting.

Digital Wallet
Related terms: mobile wallet, e-wallet

Software that stores payment credentials, loyalty cards, and sometimes cryptocurrency, enabling electronic transactions. Example: a user adds a debit card to a smartphone wallet and pays at a retailer by scanning a QR code. Challenges include device security, interoperability across merchants, and compliance with data-protection laws.

Dispute Resolution
Related terms: chargeback, arbitration
Mechanisms for addressing disagreements between payers and merchants over a transaction. May involve mediation by payment processors or regulatory bodies. Example: a consumer files a dispute for a non-delivered product, leading to a review and possible refund. Challenges include time-consuming investigations and potential reputational damage.

EMV
Related terms: chip card, tokenization
A global standard for cards equipped with embedded microchips to authenticate transactions. It reduces counterfeit fraud by requiring dynamic data. Example: a shopper inserts a chip-enabled credit card into a terminal that reads the chip. Challenges include higher implementation costs for merchants and occasional compatibility issues with older terminals.

FinTech Sandbox
Related terms: regulatory sandbox, innovation hub
A controlled environment where startups can test new payment solutions under relaxed regulatory constraints. Example: a company pilots a peer-to-peer transfer app within a sandbox before full market launch. Challenges involve limited scale, strict exit criteria, and ensuring consumer protection.

Fraud Detection
Related terms: machine learning, risk scoring
Techniques and tools used to identify suspicious transactions in real time. Methods include rule-based engines, behavioral analytics, and AI models. Example: a system flags a large overseas purchase made from a newly created account. Challenges include balancing false positives with user experience and adapting to evolving fraud patterns.

Gateway
Related terms: payment processor, merchant account
A service that securely transmits transaction data between a merchant’s website and the acquiring bank. It handles encryption, tokenization, and routing. Example: an online store uses a payment gateway to accept Visa and Mastercard payments. Challenges involve downtime risk, compliance with PCI DSS, and the need for multi-currency support.

Instant Payment
Related terms: real-time settlement, RTP

A system that enables near-immediate transfer of funds between accounts, typically available 24/7. Example: a user sends money to a friend and the recipient sees the funds within seconds. Challenges include ensuring liquidity, safeguarding against fraud, and integrating legacy banking infrastructure.

Issuer
Related terms: card network, acquiring bank
The financial institution that provides a payment card or account to the consumer and assumes liability for the transaction. Example: a bank issues a debit card that the holder uses for online purchases. Challenges involve managing risk, complying with network rules, and providing customer support for disputes.

International Remittance
Related terms: cross-border, FX
The transfer of money across national borders, often involving currency conversion. Example: a migrant worker sends earnings to family in another country via a digital remittance platform. Challenges include high fees, exchange-rate volatility, and regulatory compliance with anti-money-laundering (AML) laws.

ISO 20022
Related terms: messaging standard, XML
A universal financial messaging standard that enables richer data exchange for payments, securities, and trade. Example: banks adopt ISO 20022 to send structured payment instructions, improving automation. Challenges involve migration costs, legacy system compatibility, and ensuring consistent data mapping.

KYC
Related terms: identity verification, AML
“Know Your Customer” procedures required to verify the identity of users before allowing them to transact. Example: a fintech app requests a government-issued ID and a selfie for verification. Challenges include balancing privacy with regulatory demands and handling false-negative rejections.

Ledger
Related terms: blockchain, accounting
A record-keeping system that logs all transactions in a chronological order. In digital payments, ledgers can be centralized (bank databases) or decentralized (blockchain). Example: a payment processor maintains a ledger of all processed transactions for reconciliation. Challenges involve ensuring immutability, scalability, and auditability.

Liquidity Provider
Related terms: market maker, settlement bank
An entity that supplies the necessary funds to settle payment flows, especially in real-time systems. Example: a bank acts as a liquidity provider for an instant payment network, guaranteeing that each transaction can be cleared instantly. Challenges include managing short-term funding risk and regulatory capital requirements.

Merchant Account
Related terms: acquirer, gateway
A specialized bank account that allows a business to accept electronic payments. Funds from card transactions are deposited here after settlement. Example: an online retailer opens a merchant account to receive Visa payments. Challenges include setup fees, chargeback liability, and reconciliation of multiple payment methods.

Mobile Money
Related terms: USSD, digital wallet
Financial services delivered via mobile phones, often using simple interfaces like USSD codes, enabling users without bank accounts to send and receive money. Example: a user in a developing market tops up a mobile money balance and pays a local merchant. Challenges include network reliability, regulatory oversight, and integration with formal banking systems.

NFC
Related terms: contactless, RFID
Near-Field Communication technology that enables short-range wireless data exchange, commonly used for tap-to-pay transactions. Example: a smartphone equipped with NFC is used to pay at a retail checkout terminal. Challenges involve ensuring secure token exchange and widespread adoption of compatible terminals.

Open Banking
Related terms: API, PSD2
A regulatory framework that mandates banks to share customer data with third-party providers via secure APIs, fostering competition and innovation. Example: a budgeting app accesses a user’s transaction history through an open banking API to provide insights. Challenges include data privacy, consent management, and standardizing API specifications.

PCI DSS
Related terms: compliance, tokenization
The Payment Card Industry Data Security Standard that sets requirements for securing cardholder data. Example: a merchant undergoes PCI DSS assessment to validate that its payment infrastructure protects credit-card information. Challenges involve ongoing audits, costly remediation, and adapting to evolving threat landscapes.

Payment Aggregator
Related terms: platform, marketplace
A service that allows multiple merchants to process payments under a single master merchant account, simplifying onboarding. Example: an e-commerce marketplace uses a payment aggregator to handle transactions for individual sellers. Challenges include shared liability for fraud and the need for granular reporting to each seller.

Payment Processor
Related terms: gateway, acquirer
The entity that handles the technical aspects of transmitting transaction data between merchant, card network, and issuing bank. Example: a processor routes a credit-card transaction from a retailer's POS system to the appropriate network. Challenges involve latency, downtime risk, and compliance with multiple network rules.

QR Code Payment
Related terms: scan-to-pay, merchant display
A method where a user scans a merchant-generated QR code with a mobile app to initiate a payment. Example: a café displays a QR code that customers scan to pay via a digital wallet. Challenges include ensuring code integrity, handling offline scenarios, and providing receipts.

Regulatory Sandbox
Related terms: FinTech sandbox, pilot
A framework that permits fintech firms to test innovative payment solutions under relaxed regulatory conditions for a limited period. Example: a startup trials a new cross-border remittance algorithm within a sandbox before full rollout. Challenges involve strict reporting, limited user reach, and the need to transition to full compliance quickly.

Risk Scoring
Related terms: fraud detection, machine learning
Assigning a numerical value to a transaction or user based on the likelihood of fraud or default. Example: a payment platform assigns a high risk score to a transaction originating from a new IP address, triggering additional verification. Challenges include model bias, data quality, and the trade-off between security and conversion rates.

Secure Token
Related terms: tokenization, PCI DSS
A surrogate value that replaces sensitive payment data (such as a PAN) during transactions, reducing exposure of actual credentials. Example: a merchant stores a token instead of a card number, allowing repeat purchases without re-entering card details. Challenges involve token lifecycle management and interoperability across payment networks.

Settlement
Related terms: clearing, netting
The final transfer of funds between financial institutions after a transaction has been cleared. Example: at the end of the day, a bank settles its net ACH positions with the Federal Reserve. Challenges include ensuring sufficient liquidity, reconciling discrepancies, and meeting regulatory deadlines.

SWIFT

Related terms: messaging, correspondent banking
A global messaging network that facilitates international bank-to-bank communications for payments and securities. Example: a bank sends a SWIFT MT103 message to transfer funds to a foreign counterpart. Challenges involve high fees, slower processing times compared to newer instant-payment rails, and reliance on correspondent relationships.

Tokenization
Related terms: secure token, PCI DSS
The process of substituting sensitive data with non-sensitive equivalents (tokens) that can be used in the payment ecosystem without exposing the original data. Example: a mobile wallet replaces a card's primary account number with a token for each transaction. Challenges include token mapping, revocation procedures, and ensuring token uniqueness.

Transaction Fee
Related terms: interchange, markup
A charge applied to a payment for processing, typically expressed as a percentage of the transaction amount plus a fixed component. Example: a merchant pays a 2.5 % fee plus $0.30 for each credit-card sale. Challenges involve fee transparency, competition among processors, and impact on merchant margins.

Two-Factor Authentication (2FA)
Related terms: authentication, OTP
A security method that requires two independent credentials before granting access, such as something the user knows (password) and something they have (one-time code). Example: a user logs into a payment app and receives an SMS code to complete sign-in. Challenges include delivery reliability, user inconvenience, and susceptibility to SIM-swap attacks.

Unified Payments Interface (UPI)
Related terms: instant payment, QR code
An Indian real-time payment system that enables inter-bank transfers via mobile devices using a virtual address (UPI ID). Example: a user sends money to a friend by entering the friend's UPI ID in a banking app. Challenges include scaling to high transaction volumes, ensuring fraud detection, and extending interoperability beyond India.

Virtual Account
Related terms: sub-account, reconciliation
A unique, non-physical account number assigned to a payer for the purpose of tracking incoming payments without creating a separate bank account. Example: an e-commerce platform generates a virtual account for each seller to simplify fund allocation. Challenges involve managing large numbers of virtual identifiers and ensuring proper mapping to real accounts.

Wire Transfer

Related terms: SWIFT, ACH
A direct electronic transfer of funds between banks, often used for high-value or time-critical payments. Example: a corporation wires a large sum to a supplier overseas using its bank's online platform. Challenges include high fees, limited transparency, and potential for fraud if recipient details are compromised.

XML
Related terms: ISO 20022, data format
Extensible Markup Language used to structure payment messages, especially under standards like ISO 20022. Example: a bank sends an ISO 20022 payment instruction encoded in XML to its correspondent. Challenges involve parsing complexity, ensuring schema compliance, and handling large message volumes.

Zero-Interchange Fee
Related terms: merchant discount, pricing model
A pricing model where the merchant does not pay the interchange component of the transaction fee, often subsidized by the payment network or a third party. Example: a digital wallet offers zero-interchange fees to attract small merchants, absorbing costs through alternative revenue streams. Challenges include sustainability of the model and potential regulatory scrutiny over fee structures.