Detailed Plan - Derivatives and Options Training / 7-Day Course Outline

Day 1: History of Derivatives & Essential Mathematics

Objectives: Understand derivatives' historical evolution, market impact, and key mathematical concepts for finance.

- **Part A: History of Derivatives**
  - **Topics**: Evolution of derivatives from ancient times, key historical transactions, market bubbles, modern derivatives market, key participants.
  - **Agenda**:
    - History: Earliest references, transactions in Roman and Middle Ages.
    - Market Structure: Market size, derivative types, clearing houses, ISDA.
    - Market Crashes: Dojima Rice Exchange, Tulip Mania, South Sea, Mississippi bubbles.
- **Part B: Essential Mathematics**
  - **Topics**: Time value of money, linear equations, basic descriptive statistics, probability distributions.
  - **Agenda**:
    - Linear Equations: Algebra, slope, elasticity.

        - Time Value of Money: Annuities, perpetuities.
        - Statistics: Mean, median, standard deviation, correlation.
        - Distributions: Histograms, normal, binomial, and Poisson distributions.

Day 2: Forwards and Futures

Objectives: Grasp forward and futures contracts, their differences, and their role in hedging and speculation.

- **Part A: Forwards**
    - **Topics**: Forward contracts, pricing, hedging, FX & commodity forwards.
    - **Agenda**:
        - Introduction: Contract specs, forward positions, hedging.
        - Pricing: Simple asset forwards, commodity forwards, forward curve.
        - FX Forwards: Valuation, arbitrage.
- **Part B: Futures**
    - **Topics**: Futures contracts, margining procedures, key contract types, hedging.
    - **Agenda**:
        - Futures Overview: Contract differences, margining.
        - Key Futures: Equity, interest rate, bond, and commodity futures.

        - Hedging with Futures: Risk management in commodities, P&L calculations.

Day 3: Swaps

Objectives: Understand swap mechanics, pricing, and valuation across various swap types.

- **Topics**: Types of swaps, pricing methodologies, swap spreads, comparative advantages.
- **Agenda**:
    - Introduction: Swap terminology, risks, spreads.
    - Types of Swaps: Interest rate, basis, currency, asset, and commodity swaps.
    - Valuation: Techniques for calculating market values and spreads.

Day 4: Introduction to Options

Objectives: Familiarize with options basics, pricing factors, option types, and moneyness concepts.

- **Topics**: Options contract fundamentals, intrinsic/time value, put-call parity, Greeks.
- **Agenda**:
    - Basics: Option types, value factors.
    - Positions: Long/short calls and puts.
    - Exotic Options: Barrier and digital options.

Day 5: Option Strategies

Objectives: Learn various option trading strategies for different market conditions and investor goals.

- **Topics**: Spread, replication, volatility, neutral, and portfolio strategies.
- **Agenda**:
  - Spread Strategies: Long/short call and put spreads.
  - Volatility: Straddle, strangle, butterfly strategies.
  - Portfolio Management: Covered call, protective put strategies.

Day 6: Option Pricing

Objectives: Grasp the theoretical foundations of option pricing models, including binomial and BSM methods.

- **Topics**: Binomial pricing, stochastic processes, BSM formula, payoff components.
- **Agenda**:
  - Binomial Models: One and two-period pricing.
  - Stochastic Processes: Markov, Wiener, Ito's lemma.
  - BSM Components: N(d1), N(d2) values, random paths.

Day 7: Option Greeks

Objectives: Understand option Greeks, their effects on pricing, and hedging strategies to manage risk.

- **Topics**: Delta, Gamma, Vega, Theta, Rho, and their graphical representations.
- **Agenda**:
  - Greeks Overview: Option sensitivities, risk hedging.
  - Specific Greeks: Delta, Gamma, Vega, Theta, Rho, and associated hedging techniques.