Project Plan of Action

Phase 1: Core Concepts & Foundational Models (Mid-Term Submission)

Target: ~45% of total work | Duration: ~3.5 weeks

Topic	*Difficulty*	*Importance*	*Estimated Time*
Financial Markets	Easy	Low	1 day
Interest Rates	Easy	Low	1.5 days
Cash Flow Stream	Easy	Low	1.5 days
Bonds	Medium	Medium	3 days
Portfolio & Basics	Easy	Low	2 days
Forwards & Pricing Models	Medium	Important	4–5 days
Futures & Pricing Models	Medium	Important	4 days
Hedging with Futures	Medium	Medium	3 days

Deliverables for Phase 1:

- Sectioned write-up with math and market context
- Derivations: Forward/futures pricing with cost-of-carry
- Hedging example (futures-based)
- Excel/Python tools for:
    - Bond valuation
    - Forwards/futures pricing
    - Hedging simulation
- Payoff structure charts for forwards and futures

Phase 2: Advanced Models & Strategy (Final Submission)

Target: ~55% of total work | Duration: ~4.5 weeks

Topic	*Difficulty*	*Importance*	*Estimated Time*
Options	Medium	Important	3–4 days
Premium Bounds & Valuation	Medium	Medium	2–3 days
Discrete Time Models	Hard	Medium	5–6 days
Martingale Theory	Hard	Medium	5 days
Continuous Time Models	Medium	Medium	4 days
Black-Scholes Model	Hard	Important	5–6 days
Option Trading Strategy	Easy	Medium	2 days

Deliverables for Phase 2:

- Detailed write-up on:
  - Binomial pricing model
  - Martingale measures & risk-neutral valuation
  - SDEs, GBM, and Itô calculus
- Complete derivation of Black-Scholes PDE and solution
- Greeks (Δ, Γ, θ, ρ, Vega) visualized and explained
- Code: Option pricing with CRR & BSM models
- Trading Strategy Simulator (e.g., straddle or spread with visual payoff)
