Session Number	Session Title	Topics/Flow	Count of In-class Quizzes	Assignments	Additional Problems (Homework)
1	The Basics	Expectations, Gambling, Infinite Number Series			
2	Conditional Probability	Expectation for conditional probability			
3	Birthday Problems	Birthday Pairings, Finding your birth mate, Birthday Holidays		Problem 20, Problem 21	
4	Continuos Distribution	Probability, Expectation - Uniform, Normal, Poison Distribution		Problem 5, 12, 24, 27, 28, 29, 42 (b),	
5	Random Walk	1D Walk, Principle of Symmetry		Problem 22, 23, 37, 38, 45, 46	
6	Game Theory	Prisoner's Dilemma, Personal Taste in Money		Problem 48, 51, 52, 53, 54, 55	
7	Quantitative Research Workflow	What quantitative researchers do, Structure of quant trading firms, Buy-side vs market makers, Research → backtesting → production workflow, Financial datasets, Introduction to alpha signals, Data biases in finance, Market data overview			
8	Market Microstructure	Limit order books, Bid/ask spread, Market orders vs limit orders, Liquidity, Slippage, Price formation, Market impact, Order imbalance, Introduction to execution quality			
9	Financial Time Series for Traders	Returns vs prices, Log returns intuition, Volatility clustering, Heavy tails intuition, Random walk intuition, Moving averages, Trend-following intuition, Mean reversion intuition, Autocorrelation intuition			
10	Alpha Signals & Quant Research	Alpha generation, Momentum signals, Mean reversion signals, Cross-sectional signals, Feature engineering intuition, Information coefficient (IC), Signal decay, Signal stability, Research iteration workflow			
11	Alpha Signals & Quant Research-2				
12	Statistical Arbitrage & Pairs Trading	Statistical arbitrage intuition, Cointegration intuition, Spread modeling, Relative value trading, Mean-reverting portfolios, Entry/exit logic, Market-neutral strategies			
13	Backtesting Systems & Biases	What is backtesting, Event-driven backtesting intuition, Lookahead bias, Survivorship bias, Data leakage, Slippage, Transaction costs, Realistic trading assumptions			
14	Portfolio Construction & Risk Management	Diversification, Portfolio allocation, Correlation intuition, Risk-adjusted returns, Sharpe ratio, Drawdown, Volatility, Position sizing, Exposure control			
15	Machine Learning for Quant Trading	ML in finance, Feature engineering, Train/test split, Overfitting, Out-of-sample testing, Regression intuition, Tree model intuition, Prediction vs explanation			
16	Quant Infrastructure & KDB+/q	Tick data systems, Time-series databases, Research infrastructure, Why quant firms use kdb+, Intro to q language, Python + q workflow, Market analytics systems			
17	Strategy Refinement & Robustness	Overfitting detection, Walk-forward testing, Out-of-sample evaluation, Regime changes, Strategy robustness, Monitoring live strategies			
		Please note: The above syllabus is tentative. The number of sessions, topics covered, and sequencing may change.			

Evaluation Component	Date Of Announcement to Students	Deadline of Submission	Weightage	Comments
Assignments	Continuous	-	30%	
Capstone Projects + Vivas	16th June	24th June	40%	Viva will be conducted on 26th June (Online)
End-term Exam	-	-	30%	
***Same for Internship Exempted Studens**				
Credits:	**3**			