**Learn Quant Trading - The Roadmap**

**Goals**

Today is the 21st of July. By the end of this year, I want to have a achieved 3 things.

1. Have a complete understanding of the concepts within this course.
2. Be contributing to Open Source Projects in the finance space.
3. Be entertaining or seeking offers of employment within the space

ChatGPT estimates this course would take, around 2 years to complete part-time. Given my familiarity with many of the topic areas, I feel that with 22 hours (see study plan) I should be able to condense that into 5 months.

**Useful Links**

* [**https://github.com/topics/trading**](https://github.com/topics/trading)
* [**https://www.efinancialcareers.com/news/2023/05/robert-underwood-jpmorgan-goldman-sachs**](https://www.efinancialcareers.com/news/2023/05/robert-underwood-jpmorgan-goldman-sachs)
* [**https://dev.to/lovepreetsingh/how-to-make-your-first-open-source-contribution-and-get-paid-2241**](https://dev.to/lovepreetsingh/how-to-make-your-first-open-source-contribution-and-get-paid-2241)
* [**https://profitview.net/blog/open-source-trading-projects**](https://profitview.net/blog/open-source-trading-projects)
* [**https://www.freecodecamp.org/news/how-to-make-your-first-open-source-contribution/**](https://www.freecodecamp.org/news/how-to-make-your-first-open-source-contribution/)
* [**https://dev.to/opensauced/how-i-got-hired-contributing-to-open-source-projects-546i**](https://dev.to/opensauced/how-i-got-hired-contributing-to-open-source-projects-546i)

**Step 1: Fundamentals of Financial Markets (Duration: 1 month)**

Basic understanding of financial markets and financial instruments

Introduction to financial derivatives

Principles of macroeconomics and microeconomics

**Step 2: Probability and Statistics (Duration: 2-3 months)**

Basic concepts of probability

Probability distributions

Central Limit Theorem

Hypothesis testing

Regression analysis

Time series analysis

**Step 3: Basic Programming (Duration: 1-2 months)**

Programming fundamentals using Python

Working with data: NumPy, Pandas

Data visualization: Matplotlib, Seaborn

**Step 4: Financial Engineering and Derivative Pricing (Duration: 1 month)**

Introduction to financial engineering

Understanding of Black-Scholes Model

Pricing options and futures

Basics of risk management

**Step 5: Advanced Programming and Machine Learning (Duration: 3-4 months)**

Object-Oriented Programming (OOP) in Python

Introduction to machine learning with scikit-learn

Supervised and unsupervised learning

Reinforcement learning basics

Neural Networks and Deep Learning

**Step 6: Algorithmic and Quantitative Trading (Duration: 1-2 months)**

Overview of trading algorithms

Understanding high-frequency trading

Backtesting strategies with historical data

Risk and money management in algorithmic trading

**Step 7: Optimization Techniques (Duration: 1 month)**

Linear Programming

Convex Optimization

Stochastic Optimization

Multi-Objective Optimization

**Step 8: Quantitative Trading Strategies (Duration: 2-3 months)**

Pairs Trading and Mean-Reversion strategies.

Momentum-based strategies

Machine Learning-based trading strategies

High-frequency trading strategies

**Step 9: Risk Management and Regulation (Duration: 1 month)**

Understanding Value at Risk (VaR)

Stress Testing and Scenario Analysis

Regulatory framework and compliance

**Step 10: Practical Trading and Portfolio Management (Duration: 2-3 months)**

Implement, backtest, and evaluate your trading strategies in live markets using paper trading

Learn portfolio optimization

Understand behavioral finance and its implications

Incorporate risk management into your trading strategy

Ethics in quantitative finance

This plan will take approximately 1.5-2 years to complete if done part-time. The timeline can be accelerated or decelerated based on the individual's background and time availability. It's crucial to apply the theory by working on practical projects at every step. Practical applications help in understanding real-world challenges and learning how to tackle them.

Note that this is a high-level roadmap and it would be best to complement this with textbooks, online courses, and mentorship if available. This plan is heavily biased towards self-study. If you are attending a university or college, they may offer courses that cover these topics.