Financial Market Data Analysis and Algorithmic Trading Training Course

Professional Development Training Course Outline

Category	Research and Data Analysis	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

In today’s data-driven global economy, financial market data analysis and algorithmic trading have become essential skills for professionals seeking to maximize investment performance and reduce risk. Financial Market Data Analysis and Algorithmic Trading Training Course empowers participants with in-demand knowledge of quantitative analysis, real-time data feeds, backtesting strategies, market prediction models, and automated trade execution. Participants will develop critical skills to harness large-scale financial datasets, construct robust trading algorithms, and leverage AI-powered trading models to stay ahead in volatile markets.

With a practical, hands-on approach, this course combines foundational principles with cutting-edge techniques used in Wall Street, hedge funds, and quant fintech startups. Through in-depth modules and real-world case studies, learners will explore data acquisition, strategy development, risk assessment, and machine learning applications in finance. By the end of the program, learners will confidently build and deploy algorithmic trading systems aligned with real market conditions and performance benchmarks.

Programme Curriculum

Financial Market Data Analysis and Algorithmic Trading Training Course

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Course Objectives

1. Understand the fundamentals of financial markets, instruments, and market microstructure.
2. Analyze real-time and historical financial data streams using Python and R.
3. Master algorithmic trading concepts and how to automate trade decisions.
4. Implement technical and fundamental analysis in strategy development.
5. Develop, backtest, and optimize quantitative trading strategies.
6. Apply statistical models and machine learning to forecast market movements.
7. Use high-frequency trading (HFT) systems and techniques responsibly.
8. Evaluate risk management practices in algorithmic trading environments.
9. Explore portfolio optimization using modern financial theories.
10. Integrate API trading with platforms like Interactive Brokers and Alpaca.
11. Build scalable trading bots using cloud computing and DevOps.
12. Understand the regulatory landscape and ethical concerns in algo trading.
13. Gain hands-on experience through live simulations and capstone projects.

Target Audiences

1. Financial analysts and investment professionals
2. Data scientists and quantitative researchers
3. Software developers interested in fintech
4. Traders and portfolio managers
5. Economics and finance students
6. Risk and compliance officers
7. Academics and educators in finance and data analytics
8. AI/ML engineers seeking finance applications

Course Duration: 5 days

Course Modules

Module 1: Introduction to Financial Markets & Trading Ecosystem

- Overview of equity, forex, and derivatives markets
- Market participants and order types
- Trading platforms and broker APIs
- Regulatory bodies and market rules
- Challenges and opportunities in algorithmic trading
- **Case Study**: Anatomy of a flash crash – What went wrong?

Module 2: Data Acquisition and Financial APIs

- Sources of financial market data (Yahoo Finance, Quandl, Bloomberg)
- Real-time vs historical data streams
- Web scraping and data cleansing
- Python and R for data ingestion
- Building custom data pipelines
- **Case Study**: Setting up a real-time data stream for S&P 500 tickers

Module 3: Financial Data Analysis Techniques

- Time series analysis and data visualization
- Exploratory data analysis (EDA) with Pandas
- Technical indicators and overlays
- Statistical testing and hypothesis validation
- Pattern recognition in historical price data
- **Case Study**: Analyzing BTC-USD historical trends and volatility

Module 4: Strategy Design and Backtesting

- Types of trading strategies (momentum, mean-reversion, arbitrage)
- Strategy design framework
- Vectorized backtesting with Backtrader and Zipline
- Optimization techniques using historical data
- Avoiding overfitting in strategy development
- **Case Study**: Building and testing a moving average crossover strategy

Module 5: Machine Learning in Algorithmic Trading

- Supervised and unsupervised learning models
- Feature engineering from financial datasets
- ML libraries (Scikit-learn, TensorFlow, XGBoost)
- Predicting stock prices using regression and classification
- Limitations of ML in financial contexts
- **Case Study**: Using Random Forest to predict Tesla stock movement

Module 6: High-Frequency Trading & Execution Models

- Characteristics of high-frequency markets
- Latency and infrastructure considerations
- Market making and arbitrage opportunities
- Order execution algorithms (TWAP, VWAP, Iceberg)
- Smart order routing and slippage control
- **Case Study**: Simulating HFT strategies using synthetic tick data

Module 7: Risk Management and Portfolio Optimization

- Value at Risk (VaR) and expected shortfall
- Diversification and correlation analysis
- Position sizing techniques
- Sharpe Ratio, Sortino Ratio, and other metrics
- Modern Portfolio Theory and CAPM
- **Case Study**: Constructing a low-risk portfolio using ETFs

Module 8: Deployment and Live Trading Infrastructure

- Connecting to broker APIs (IBKR, Alpaca, OANDA)
- Cloud deployment with AWS/GCP
- Logging, monitoring, and exception handling
- Real-time trade execution and alert systems
- Post-trade analytics and strategy rebalancing
- **Case Study**: End-to-end deployment of a live momentum bot

Training Methodology

- Interactive instructor-led live sessions

- Hands-on coding workshops using Jupyter Notebooks
- Group discussions and peer reviews
- Capstone project with mentorship support
- Case-based teaching methodology with real datasets

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

Register Online Now

Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com