KOENIG SOLUTIONS · COURSE OUTLINE

Algo Trading with Python: Pandas & Quantopian

Learn to analyse financial data and build trading algorithms with Python, Pandas, and Quantopian.

4 Days	11	53
DURATION	MODULES	TOPICS

COURSE OVERVIEW

This course begins with Python fundamentals and the NumPy and Pandas libraries for data handling, then covers data visualization and sourcing financial data through Pandas DataReader and Quandl. It proceeds through time series analysis with Pandas, including datetime indexing, resampling, and models such as ETS, EWMA, and ARIMA. It then introduces finance fundamentals including portfolio allocation, optimization, CAPM, and the efficient frontier. Finally, it covers building trading algorithms and using Quantopian for research, pipelines, and algorithm development.

WHO THIS COURSE IS FOR

Python Developers | **Data Analysts** | **Quantitative Analysts** | **Algo Traders** | **Financial Analysts**

LEARNING OBJECTIVES

- Install and configure Python for data analysis
- Apply NumPy arrays and operations for numerical computation
- Manipulate data using Pandas Series and DataFrames
- Visualize data and time series with Matplotlib and Pandas
- Retrieve financial data using Pandas DataReader and Quandl
- Analyse time series data using ETS, EWMA, and ARIMA models
- Apply finance fundamentals such as CAPM and portfolio optimization
- Develop trading algorithms and pipelines using Quantopian

COURSE SYLLABUS

11 Modules, 53 Topics

DAY 1

01

Getting Started with Python

TOPICS

- Introducing Python
- Installing Python on Windows
- Installing Python on Linux and other Operating Systems
- Introducing Python IDLE
- Programming in Interactive Mode
- Programming in Scripting Mode

02

Introduction to NumPy

TOPICS

NumPy Arrays · NumPy Operations · NumPy Indexing

03

Introduction to Pandas

TOPICS

- Series
- Data Frames
- Missing Data
- Merging, Joining, and Concatenating DataFrames
- Pandas Common Operations
- Data Input and Output

DAY 2

04

Introduction to Visualization in Python

TOPICS

Matplotlib Basics · Pandas Time Series Visualization

05

Introduction to Data Sources

TOPICS

Pandas DataReader · Quandl

06

Introduction to Time Series with Pandas

TOPICS

Datetime Index · Time Resampling · Time Shifts · Pandas Rolling and Expanding

07

Introduction to Time Series

TOPICS

Time Series Basics · Introduction to Statsmodels · ETS Theory · EWMA Theory · EWMA Code Along · ETS Code Along

DAY 3

08

Introduction to Time Series [Contd.]

TOPICS

ARIMA Theory · ACF and PACF · ARIMA with Statsmodels

09

Introduction to Python Finance Fundamentals

TOPICS

- Sharpe Ratio Slides
- Portfolio Allocation Code
- Portfolio Optimization
- Types of Funds
- Short Selling
- CAPM - Capital Asset Pricing Model
- Stock, Splits and Dividends
- EMH
- Efficient Frontier
- Sharp Ratio

DAY 4

10

Introduction to Trading Algorithms

TOPICS

Pipeline Trading Algorithm · Leverage · Hedging · Portfolio Analysis with PyFolio · Futures on Quantopian

11

Introduction to Quantopian

TOPICS

Quantopian Research Basics · Quantopian Algorithms Basics · First Trading Algorithm · Quantopian Pipelines Factors · Quantopian Pipelines Filters · Quantopian Pipeline - Masking and Classifiers

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

ABOUT KOENIG

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

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