

## CERTIFIED PROGRAMME ON

Algorithmic Trading & Computational Finance  
using Python & R

```
cashBalanceList = []
timeSteps = len(dateList) # It can be helpful
barIterator = 0
while barIterator < timeSteps:
    for symbol in backtestSymbolList:
        # Historical data input has to be a
        # Simple moving average cross strat
        price = data[symbol]["close"]
        SMA20 = data[symbol]["SMA20"]
        SMA50 = data[symbol]["SMA50"]

        if SMA20 > SMA50:
            openPosition = backtester.re
```

## OVERVIEW

NSE Academy & TRADING CAMPUS presents "Algorithmic Trading & Computational Finance using Python & R"- a certified course enabling students to understand practical implementation of Python and R for trading across various asset classes.

Financial Markets have revolutionized the way financial assets are traded. Thus it is imperative to develop domain knowledge in Equity analysis, Technical Analysis & Algorithmic Trading. Python and R are technology platform of choice for automated trading as these platform provides multiple APIs and Libraries for quick implementation of trading strategy. Within this course, technology and well defined strategies will be used extensively to maximize returns in a highly competitive environment.

This course will provide exposure to application of Python for Algorithmic Trading and "R" for Computational Finance. Students will learn to develop Real-Time Strategies and create a trading engine that will be supported by advance data analytics. Python and R provides a quantitative edge in Advance Capital Markets - Our students will be a step ahead of competition.

## PROGRAM HIGHLIGHTS

The aim of the Certified Program on "Algorithmic Trading & Computational Finance using Python & R" is to develop skills and competency of market participants in securities markets. It's a gateway for every participants to Algorithmic Trading with solid foundation of financial markets. The evaluation process involves project reports prepared by applying strategies in Real Time Markets and MCQ's covering the theory content.

## KEY HIGHLIGHTS

- Jointly Certified By NSE Academy & Trading Campus
- Program conducted by faculty with extensive trading experience
- Placement opportunity with top brokerage houses as Quant analyst role
- 100 Hours program to build Algorithmic Trading strategies with advanced data analytics
- Ready to use Strategies & Template with back testing feature
- Understand High Frequency Trading, AI & Machine Learning
- Faculty with industry experience
- Two months internship for top successful candidates.

## WHAT WILL YOU LEARN

- Comprehensive LIVE Strategy Engine with back testing feature
- The ability to access the efficacy of an algorithmic trading model within live environment
- Skill set of Python & R for Algo Trading and Advance Financial Data Analytics
- Validation of your skills and expertise in algorithmic trading.

# SYLLABUS

## Algorithmic Trading using Python

### Technical Trading (Using Python)

- Basics of Technical Analysis : Chart Types, Chart Patterns, Gap Theory, Candle Pattern, Technical Indicators
- Designing of Strategy Builder using Technical Indicators & Price Theory
- Designing of Back-Testing platform to achieve strategy optimization
- Real-time API Connectivity by handling Broadcast, OMS & RMS
- Real-time Database upgrade & Data wrangling
- Comprehensive LIVE Strategy Engine

### Options Trading (Using Python)

- Basics of Options Trading : Option Payoffs, Black Scholes Calculator, Greeks Profile
- Implementing Option Strategies in Live Market using Python
- Designing Greeks Dashboard for hedging mechanism
- Delta Neutral, Gamma Hedging & Volatility Trading using Live Simulators
- Design Back-Testing platform for IV Trading, OI Analysis & Results Trading
- Strategy based on Volatility Smile & Volatility Skew

### Grey Box & Black Box Trading (Using Python)

- Implementation of Scalping, Scaling, Advance Jobbing & Trend Jobbing in Live Market Environment
- Triangular Arbitrage Strategies for Forex & Commodities
- Mean Reverting Strategies like Pair Trading using Z score Model
- Basket Strategy (Index-Index, Index-Stocks)
- Statistical Arbitrage Strategies
- Pre & Post Result based Trading Strategies using Sentiment Indicators
- Overview on High Frequency Trading
- Overview on Artificial Intelligence and Machine Learning in Trading

## Computational Finance

### Equity & Fixed Income Analytics (Using R)

- Fundamental Analysis using Ratio Calculations
- Peer Group Comparison
- Stock Selection Strategy based on Decision Trees
- DCF Valuation and Sensitivity analysis
- Bond Pricing along with duration and convexity
- FX & Interest Rate Derivatives like Interest Rate Futures, Swaps, Currency Options

### Portfolio Analytics & Risk Management (Using R)

- Implementation of CAPM, APT & Fama French Model
- Market Neutral Portfolio & Balanced Portfolio
- Model Portfolio using Efficient Portfolio Theory
- Risk Estimation – VAR, Beta, Covariance Matrices, Correlation
- Historical VAR, Stress analysis, Monte Carlo Simulation
- Credit Rating Matrix & Credit Risk Models

## Fees Structure (All Amount Inclusive of Applicable Taxes)

<b>REGISTRATION FEE</b>	Rs. 500/-
<b>TECHNICAL STRATEGIES USING PYTHON</b>	Rs. 15,000/-
<b>OPTIONS STRATEGIES USING PYTHON</b>	Rs. 15,000/-
<b>TECHNICAL &amp; OPTIONS STRATEGIES USING PYTHON</b>	Rs. 30,000/-
<b>ENTIRE COURSE USING PYTHON &amp; “R”</b>	Rs. 50,000/-

## Venue

Trading Campus, First Floor, Shop no 3, Raghuleela Mall, Kandivali West, Mumbai

### PAYMENT MODE:

1. Payment details for internet banking using NEFT/RTGS or Demand Draft as per details given below.

BANK NAME : HDFC Bank Limited  
 A/C NO : 00600340081024  
 IFSC CODE : HDFC0000060  
 MICR CODE : 400240015  
 BRANCH : FORT  
 A/C TYPE : CURRENT A/C  
 BENEFICIARY NAME : NSE Academy Limited

2. In case of Demand Draft, please issue a Demand Draft in favour of ‘NSE ACADEMY LIMITED’ payable at Mumbai.
3. In case of Credit Card, Net Banking, Wallet please Send you Name, Mob No, Email ID, and Location to Ksubudhi@nse.co.in to generate the payment link.
4. Scan QR Code to pay using Paytm app.



### Refund Policy

1. Registration fees once paid is non-refundable under any circumstances.
2. Refund request received two working days or 48 hours prior to the date of commencement of course or launch date of course or first lecture/class, whichever is earlier - 90% of the course fees shall be refunded.
3. Refund request post 48 hours prior to the date of commencement of course or launch date of course or first lecture/class, whichever is earlier - Zero refund.

### FOR ANY FURTHER QUERIES, PLEASE CONTACT

7718989954/7045300842/9619497906 | info@tradingcampus.in

## FACULTIES

**Ronak Moondra**, MS in Financial Engineering (USA) holds Financial Risk Manager (FRM) certification from GARP USA. Currently candidate for Chartered Financial Analyst (CFA Level III) USA. His domain expertise are Portfolio & Risk Management, Quantitative Investment strategies, Statistical Arbitrage and Financial Modelling.

Ronak currently heads Quant Research for Option Financial Research Pvt Ltd. He has over 8 years of experience in Algorithmic Trading in International and Domestic markets across all financial products (Equity, Commodity & Forex). He is consultant and trainer for NSE Academy Ltd & NISM (SEBI). Also trains students for various international certifications. Known for his unique way of teaching capital markets.

**Shashank Madarapu**, PG Diploma in Finance and Software Development holds several CMFAS, FINRA certification from Singapore and USA as well as NISM certifications. He Currently serves as Product Manager and Trade Strategist for Trading Campus. His domain expertise are Trend Trading, Reversal Trading using Technical Analysis, Options Algo Trading using Python.

**Eligibility:** H.S.C

**Pre-Requisite:** Hands on Language Like Java, C, C++

**Duration:** 3 Months (1 Month for Projects)

**Program Format:** Online / Offline Learning

### **NSE Academy Limited**

Exchange Plaza, C-1, Block G, Bandra Kurla Complex,  
Bandra (E), Mumbai – 400 051. Website : [www.nseindia.com](http://www.nseindia.com)

**APPLICATION FORM**

**Certified Program on Algorithmic Trading & Computational Finance using Python & R**

Please fill all the details in CAPITAL letters only.

Name\* \_\_\_\_\_

Father's /Husband's Name: \_\_\_\_\_

Date of Birth: \_\_\_\_/\_\_\_\_/\_\_\_\_ Nationality : \_\_\_\_\_

Address\*: \_\_\_\_\_

\_\_\_\_\_

City: \_\_\_\_\_ PIN: \_\_\_\_\_

Mobile\* \_\_\_\_\_ Tel. No. (Residence): \_\_\_\_\_

Email ID: \_\_\_\_\_

ID Proof (PAN/Aadhar/DL/Passport/Voter ID): \_\_\_\_\_ ID Details: \_\_\_\_\_

Educational Qualifications*	Degree/Certificate	University/ Board	Year of Passing	% Marks
Post Graduation				
Graduation				
10+2				
Source of Information*	NSE website <input type="radio"/> Student App <input type="radio"/> Google Ad <input type="radio"/> FB <input type="radio"/> Seminar <input type="radio"/> Friends <input type="radio"/>			
Program Mode*	Online <input type="radio"/> Offline <input type="radio"/>			
Amount Paid:-		Payment Details*	Date of Payment	
GST NO(If Any):-			Txn Id/ Ref No	

Note : \* marked details are mandatory to be filled and kindly refer the following details for payment.

<p><b>NEFT DETAILS :</b> NSE ACADEMY LTD , HDFC BANK , ACCOUNT NO : 00600340081024 , MICR CODE – 400240015, IFSC CODE - HDFC0000060 , BRANCH : FORT</p>	<p><b>Modules Opted*</b> Technical Strategies Using Python <input type="radio"/> Option Strategies Using Python <input type="radio"/> Technical &amp; Options Strategies Using Python <input type="radio"/> Entire Course Using Python &amp; "R" <input type="radio"/></p>
<p><b>DIRECT PAYMENT LINK :</b> In case if you are paying through credit card, debit card or net banking then call on 7045300842/9619497906 to get the direct link</p>	

I have read and fully understand the curriculum content and other terms related to conduct of Certified Program in Algorithmic Trading Using Computational Finance & R conducted by NSE Academy Ltd and Trading Campus. I would abide by rules and regulation governing the conduct of the program.

Date of Joining:

Latest  
Passport Size  
Photograph

Signature Of Applicant