

**Birla Institute of Technology and Science, Pilani**  
**K. K. Birla Goa Campus**  
**Quark Summer Technical Project - 2021**



**Course Title:** Algorithmic Trading in Financial Markets

**Course Instructors:** i) Aditya Bhat (+91 73377 49222)  
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**Course Objective:**

This course introduces the concepts of algorithmic trading from the very basics; a field in the financial domain rapidly gaining popularity because of its speed, accuracy and ability to remove human emotions which is a major factor contributing towards stock market losses. On completion of this course, one can expect to learn how to code technical indicators, how to backtest technical strategies and check its performance using various metrics. Using this knowledge, one can go on to make a full-fledged automated trading system with a robust algorithm and deploy it on stock broker systems.

**Course Structure:**

Sl. no.	Week	Topic	Description
1	1	<b>Introduction to python -</b> Basics of python data structures and introduction to relevant libraries.  <b>Introduction to technical indicators</b>	Learning about the basics of python and libraries used in algo trading (Numpy, Pandas, Matplotlib, etc.).  Learning about basic technical indicators used - RSI, MACD, Bollinger Bands, ADX, ATR, etc.
2	2	<b>Coding technical strategies in python</b>	Using the technical knowledge gained from the previous week to code technical indicators used in algo trading.
3	3	<b>Backtesting and strategy analysis -</b> Using key performance indicators to analyze developed backtesting algorithm.	Backtesting various strategies and analyzing using risk metrics. Strategies will additionally be analyzed using visualization techniques.
4	4	<b>Fundamental analysis with python</b>	Learning how to extract fundamental data using python and coding fundamental strategies

5	5	<b>Algo trading using APIs</b>	Learning about Zerodha's Kite API to place trades on the market
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**Evaluation scheme:**

Component	Weightage	Tentative date	Details
Backtesting	70%	Week 4	Evaluation will be done on the basis of key performance indicators.
Fundamental strategy	30%	Week 6	Evaluation will be done on the basis of uniqueness and performance of the strategy.

*\*Certification is subject to the performance of the student.*

**Mode of instruction:**

Google Classroom - Project submission and resource sharing  
WhatsApp - Doubt clarifications and investment-centric discussions

(Live sessions will be held depending upon class response)