

**AURO UNIVERSITY  
(INDIA)**

**The School of Information Technology**

**Program Handbook  
for  
Online Medium-Term Certificate course  
in  
“Python for Financial  
Analysis”**

**Module Leader**

**Mr. Rajiv Katare**

**(Asst. Professor, AURO University)**



**[www.arouniversity.edu.in](http://www.arouniversity.edu.in)**

## **Who this course is for:**

- All Graduates / Post-Graduates having interest in financial market.
- All Graduates / Post-Graduates inching towards finance data science.
- All Graduates/ Post-Graduates with zero or little programming skills in python or any other programming language.

## **Duration of the course: 32 Hr.**

Students who successfully complete the course will be awarded an e-Certificate of Merit from AURO University.

## **Learning Mode:** Online

## **Requirements**

- You'll need to install Anaconda. I will show you how to do it in one of the first lectures of the course
- All software and data used in the course is free.

## **Objective:**

Python is now becoming the number one programming language for data manipulation. Due to python's simplicity and high readability, it is gaining its importance in the financial industry. The course combines both python coding and financial concepts and applies into analyzing financial data, such as stock data and also visualize that data with proper charts.

The financial industry is increasingly adopting Python for general-purpose programming and quantitative analysis, ranging from understanding trading dynamics to risk management systems. This course focuses specifically on introducing Python for financial analysis. Using practical examples, you will learn the fundamentals of Python data structures such as lists and arrays and learn powerful ways to store and manipulate financial data to identify trends and generate trading system, which we will use to transition to more advanced topics.

## **Learning Outcomes:**

This course will demonstrate the foundations of Python programming and how it is used in the finance industry. Upon completing this course, you will be able to:

- Write and execute basic Python code to perform advanced calculation, generate outputs, create variables, fetch data from excel, csv files.
- Create and manipulate important data structures such as lists, tuples, sets, and dictionaries.
- Use for loops and conditional logic to create your own custom functions
- Import external packages including NumPy, Pandas and Matplotlib
- Filter, segment, and summarize data
- Read stock data from csv, excel, online feed.

- Drawing charts for stocks.
- Computing Moving averages, EMA, WEMA for Stocks and draw on charts.
- Designing basic trading system in python.
- Evaluate strategy built from Regression model.

### **Assessment:**

Assessment will be in the form of MCQ and Quiz. There will be graded quiz after every Unit. It will contribute to 50% of total evaluation and Final Test will be of 50%. Total Evaluation will be of 50 Marks.

### **Syllabus:**

#### **Unit-1. Introduction to Python**

Introduction to python, Data types, Variables, Basic Input output operations, Various operators (Arithmetic, Comparison, Conditional etc.). Making Decisions in Python, Python's loop, Lists – Collection of Data, Operations on list.

#### **Unit-2. More on Python**

Writing functions in Python, Tuples and dictionary, Learning packages in Python, pandas, NumPy, matplotlib packages, Various mathematical tools in Python. Working with excel, csv files in Python

#### **Unit-3. Reading and manipulating Finance Data**

Read stock data from csv, excel, online feed. Drawing charts for stocks. Time series analysis in python, Computing Moving average, EMA for Stocks and draw on charts.

#### **Unit-4. Design a Basic Trading System**

Understand and draw EWMA in python, Designing basic trading system in python. Simple Linear regression model, Multiple linear Regression model, evaluate strategy built from Regression model.

### **Week- wise Execution:**

<b>Week</b>	<b>Topic</b>	<b>Duration (hr)</b>	<b>Assessment</b>
1.	Unit 1	8	<b>MCQ QUIZ on End of every week.</b>
2.	Unit 2	8	
3.	Unit 3	8	
4.	Unit 4	8	
5.	Final Test	1	
<b>Total Duration: 32 Hr.</b>			

### ***Suggested Reading:***

1. *Python Crash Course* by Eric Matthews
2. *'Head-First Python'* by Paul Barry
3. *Introduction to Python for Finance* <https://www.youtube.com/watch?v=myFD0np9eys>
4. <https://www.investopedia.com/articles/active-trading/052014/how-use-moving-average-buy-stocks.asp>

### **Facilitators' brief profile**

Myself Rajiv Katare, B.Tech (Computer Engg.), M.Tech (CSE), having more than two decades of programming experience using almost all programming languages, includes python, Java, C++, C, PHP. Besides of above I have keen interest in machine learning, deep learning, web development, IoT, Android programming etc. Also handled more than hundreds of project developments at UG and PG levels.

---- End ----