

COURSE TITLE	PYTHON FOR FINANCE
COURSE CODE	04CH0311
COURSE CREDITS	4

Objective:

- 1 NA

Course Outcomes: After completion of this course, student will be able to:

- 1 Demonstrate the understanding of basic concepts of Python Programming and IPython
- 2 Apply the key python data structure such as list, dict, set, and tuple along with functions to clean data
- 3 Utilize the Numpy multidimensional arrays to slice, and index the data
- 4 Analyze the data using pandas data frame by loading data from system and build competency in data wrangling
- 5 Examine the data by plotting graphs using matplotlib and seaborn

Pre-requisite of course:NA

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
4	0	0	50	30	20	0	0

Contents : Unit	Topics	Contact Hours
1	Introduction Python programming Basic: Python interpreter, IPython Basics, Tab completion, Introspection, %run command, magic commands, matplotlib integration, python programming, language semantics, scalar types. Control flow.	11
2	Data Structure Data Structure, functions, files: tuple, list, built-in sequence function, dict, set, functions, namespace, scope, local function, returning multiple values, functions are objects, lambda functions, error and exception handling, file and operation systems	14
3	NumPy Array and vectorized computation: Multidimensional array object. Creating ndarrays, arithmetic with numpy array, basic indexing and slicing, Boolean indexing, transposing array and swapping axes, universal functions, array-oriented programming with arrays, conditional logic as arrays operations, file input and output with array.	14

Contents : Unit	Topics	Contact Hours
4	Pandas Pandas data structure, series, DataFrame, Index Object, Reindexing, dropping entities from an axis, indexing, selection and filtering, integer indexes, arithmetic and data alignment, function application and mapping, sorting and ranking, correlation and covariance, unique values, values controls and membership, reading and writing data in text format.	13
5	Visualization with Matplotlib Figures and subplots, colors, markers, line style, ticks, labels, legends, annotation and drawing on subplots, matplotlib configuration Plotting with pandas and seaborn: line plots, bar plots, histogram, density plots, scatter and point plots, facet grids and categorical data.	8
Total Hours		60

Textbook :

- 1 Applied Statistics and Probability for Engineers, Douglas C. Montgomery, Wiley India, 2012

References:

- 1 Probability Theory A Comprehensive Course , Probability Theory A Comprehensive Course , Achim Klenke, Springer, 2014
- 2 Introduction to Statistics and Data Analysis With Exercises, Solutions and Applications in R, Introduction to Statistics and Data Analysis With Exercises, Solutions and Applications in R, Christian Heumann, Michael Schomaker Shalabh, Springer International Publishing, 2016

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking / Creative
10.00	20.00	30.00	20.00	10.00	10.00

Instructional Method:

- 1 Lectures & LAB

Supplementary Resources:

- 1 --

Supplementary Resources:

- 2 <https://jupyter.org/try-jupyter/lab/>
- 3 <https://www.w3schools.com/python/>
- 4 <https://blog.jetbrains.com/datalore/2024/05/08/risk-modeling-in-python-with-datalore-and-ai-assistant/>
- 5 https://www.youtube.com/watch?v=1dq9H_kwTZ4
- 6 <https://www.youtube.com/watch?v=EeoCcJPuJwE>