**Day 1 :**

1: Python Programming

Need for Programming

* + Advantages of Programming Overview of Python Organizations using Python
  + Python Applications in Various Domains Python Installation

Introduction to Python

* + Software Setup Instructions
  + Anaconda / Jupyter Notebook
  + Data Types
  + Strings in Python
  + Variables and values
  + Loops and decision Making

Python 2.7 to python 3.7 upgrade

* + Best practices for upgrade
  + Difference between python 2.7 vs python 3.7

Sequences and Data Structure

* + Lists and related operations
  + Tuples and related operations
  + Dictionary and related operations

**DAY 2:**

Functions

* + User-Defined Functions
  + Concept of Return Statement
  + Concept of \_\_name\_\_=” \_\_main\_\_”
  + Function Parameters
  + Different Types of Arguments
  + Global Variables
  + Global Keyword Variable
  + Scope and Returning Values
  + Lambda Functions
  + Various Built-In Functions

2: OOPs Advance Python Programming

OOPS

* + Introduction to Object-Oriented Concepts
  + Built-In Class Attributes
  + Public, Protected and Private Attributes, and Methods
  + Class Variable and Instance Variable

**DAY 3:**

Working with Modules and Handling Exceptions

* + Standard Libraries
  + Packages and Import Statements
  + Reload Function
  + Important Modules in Python
  + Sys Module
  + Os Module
  + Math Module
  + Date-Time Module
  + Random Module
  + JSON Module
  + Regular Expression
  + Exception Handling

**DAY 4:**

Visualization, web scrapping using python

Web scrapping using Python Libraries

* + Beautiful Soup Library
  + Scrapy Library
  + Hands on performing web scrapping

Data Visualization & Graphs

* + Types of Charts
  + Factors Deciding the uses of Charts
  + Scatter Plot
  + Mekko
  + Heat Map
  + Bubble Chart

**DAY 5:**

Introduction to Statics

* + Data Distributions
  + Mean
  + Variance
  + Standard deviation
  + Probability

Introduction to Probability

* + Introduction to probability
  + Simple probability
  + The addition rule, and union vs. intersection
  + Bayes' theorem
  1. Introduction to NumPy & Pandas
  + Create arrays using NumPy
  + Basics of Data Analysis
  + NumPy - Arrays
  + Operations on Arrays
  + Indexing Slicing and Iterating
  + NumPy Array Attributes
  + Matrix Product
  + NumPy Functions Functions
  + Array Manipulation
  + File Handling Using NumPy
  + Use NumPy to perform mathematical operations on arrays

**DAY 6:**

Data Manipulation using pandas

* Read and write data from text/CSV files into arrays and vice-versa
  + Understand Pandas and employ it for data manipulation
  + Understand and use the data structures available in Pandas
  + Data Frames Importing and Exporting Files in Python
  + Basic Functionalities of a Data Object
  + Merging of Data Objects
  + Concatenation of Data Objects
  + Types of Joins on Data Objects Data Cleaning using pandas
  + Exploring Datasets

Data Visualisation using Python modules

* + Matplotlib library
  + Grids, axes, plots
  + Markers, colours, fonts and styling
  + Types of plots - bar graphs, pie charts, histograms

**DAY 7:**

4: Data Handling, Computer Vision & Sentiment Analysis using python

Data Handling, Data Validation and Graphs

* + Important packages used in Machine Learning
  + Data importing
  + Working with datasets
  + Descriptive statistics
  + Central Tendency
  + Variance
  + Percentiles
  + Outlier detection
  + Variable distribution charts

Introduction to Artificial Intelligence & Machine Learning

* + Introduction to Machine Learning
  + Machine Learning tools and Techniques

**DAY 8:**

Machine Learning Overview

* + Introduction
  + Supervised Learning
  + Un-supervised Learning
  + Reinforced learning
  + Scikit-Learn
  + Regression Analysis
  + K- Means clustering algorithm

Sentiment Analysis using python

* + Understanding sentiment Analysis
  + Sentiment analysis Hands on using twitter Data

5: GUI Programming, Computer Vision using OpenCV & Natural Language processing using NLTK, Course Conclusion and Q&A

GUI Programming

* + Ipywidgets Package
  + Numeric Widgets
  + Boolean Widgets
  + Selection Widgets
  + String Widgets

Computer Vision using OpenCV

* + Image Editing Using OpenCV
  + Face Detection Using OpenCV Motion
  + Detection and Capturing Video

**DAY 9:**

NLTK Introduction & Installation

* + Extracting text content from different media
  + Sentence splitter and Tokenization
  + Stemming and Lemmatization
  + Stop word removal
  + Part of Speech (POS) tagging
  + Chunking

Couse conclusion

* + Reference books, videos and blogs
  + Next steps
  + Final Q&A
  + Final assessment (optional)