

Python Course Syllabus



DELTA**FROG**
Technology

PYTHON COURSE SYLLABUS

Course Overview

- Course Introduction
- Python 2 versus Python 3
- How to Approach This *Course*

Section: 2 **Python Setup**

- Installing Python
- Running Python Code

Section: 3 **Python Object and Data Structure Basics**

- Introduction to Python Data Types
- Numbers
- Variable Assignments (power point slides)
- Introduction to Strings (From here jupyter notebook)
- Indexing and Slicing with Strings
- String Properties and Methods
- Print Formatting with Strings

- Lists in Python
- Dictionaries in Python
- Dictionaries
- Tuples with Python
- Sets in Python
- Booleans in Python
- I/O with Basic Files in Python
- Python Objects and Data Structures Assessment Test Overview
- Python Objects and Data Structures Assessment Test Solutions

Section: 4 **Python Comparison Operators**

- Comparison Operators in Python
- Chaining Comparison Operators in Python with Logical Operators

Section: 5 **Python Statements**

- If Elif and Else Statements in Python
- For Loops in Python
- While Loops in Python
- Useful Operators in Python
- List Comprehensions in Python
- Python Statements Test Overview

Section: 6 **Methods and Functions**

- Methods and the Python Documentation
- Functions in Python
- Overview of Quick Function Exercises
- *args and **kwargs in Python
- Coding Exercise: Functions: *args
- Coding Exercise: Functions: pick evens

- Function Practice Exercises - Overview
- Function Practice Exercises - Solutions
- Function Exercise
- Lambda Expressions, Map, and Filter Functions
- Nested Statements and Scope

PYTHON OOPS CONCEPT:

- what is Class, object
- What is property, method of a class
- How to use class using an object
- How to call the method, properties of a class using an object
- Special functions len, str, del
- Inheritance, Multiple Inheritance
- method resolution order, super() keyword, self keyword

Errors and Exceptions Handling:

- Errors and Exception Handling
- Errors and Exceptions Homework
- Errors and Exception Homework – Solutions

Modules and packages:

- Modules
- Packages
- Name and main

Regular expressions in PYTHON

- Re module

- Searching using re modules
- Using different patterns

Python (Data Analytics)

- Introduction to pandas
- Numpy
- Dataframe
- Matplotlib
- WebScraping

Data Analytics (Numpy)

- Intro to numpy
- Creating arrays
- Using arrays and scalars
- Indexing Arrays
- Array Transposition
- Universal Array Function
- Array Processing

Data Analytics (Intro to Pandas)

- Series
- DataFrames
- Index objects
- Reindex
- Drop Entry
- Selecting Entries

Working with Data: Part 2

- Reading and Writing Text,.csv Files

- Excel files with Python
- Merge
- Merge on Index
- Concatenate
- Combining DataFrames
- Reshaping
- Pivoting
- Duplicates in DataFrames

Data Visualization

- Installing Seaborn
- Histograms
- chart_basics
- Stack Plots with Matplotlib and Pie Charts
- Bar Charts and Histograms with Matplotlib
- Basic customization with Matplotlib
- Styles with Matplotlib

Web Scraping with Python

- Web Scraping Part 1
- Web Scraping Part 2
- beautiful soup
- Explanation about how to do web Scraping with python, beautiful soup

Statistics for Data Science

- Statistical Distributions
 - Poisson Distribution
 - Binomial Distribution

- Theorems and Algorithms
- Bayes Theorem
 - K-Nearest Neighbor Algorithm
 - Bagging (Bootstrap aggregating)
- ROC Curve Analysis

Database Concepts using Mysql

- Section 1. Getting started with MySQL
 - Installing MySQL database server
 - Downloading MySQL sample database
 - Loading the sample database into your own MySQL database server
- Section 2. Querying data
 - SELECT
 - SELECT DISTINCT
- Section 3. Filtering data
 - WHERE – learn how to use the WHERE clause to filter rows based on specified conditions.
 - AND – introduce you to the AND operator to combine Boolean expressions to form a complex condition for filtering data.
 - OR– introduce you to the OR operator and show you how to combine the OR operator with the AND operator to filter data.
 - IN – show you how to use the IN operator in the WHERE clause to determine if a value matches any value in a list or a subquery.
 - BETWEEN – show you how to query data based on a range using BETWEEN operator.

- LIKE – provide you with technique to query data based on a specific pattern.
- LIMIT – use LIMIT to constrain the number of rows returned by SELECT statement
- IS NULL – test whether a value is NULL or not by using IS NULL operator.
- Section 4. Sorting data
 - ORDER BY – show you how to sort the result set using ORDER BY clause. The custom sort order with the FIELD function will be also covered.
- Section 5. Joining tables
 - INNER JOIN – use inner join clause to query data from multiple related tables.
 - LEFT JOIN – learn how to apply left join clause in various contexts.
 - RIGHT JOIN – show you how to use right join to query data from two or more tables.
 - CROSS JOIN – make a Cartesian product of rows from multiple tables.
- Section 6. Grouping data
 - GROUP BY – show you how to group rows into groups based on columns or expressions.
 - HAVING – filter the groups by a specific condition.
- Section 7. SubQueries
 - Subquery in select clause
 - Subquery in from clause
 - Subquery in where clause

Web development with Python

Django

- Installation
- Starting a New Project
- Django Apps
- hello world Example
- connecting to mysql db
- Forms
- creating 2 projects using django framework

flask

- installation
- starting new project
- forms
- Creating web pages using flask framework

