90 Days Python syllabus

Week 1-2: Introduction and Basics

Day 1-2: Introduction to Python

- Setting up the Python environment
- Installing Python and IDEs (e.g., PyCharm, VS Code)
- Writing and running your first Python program
- Understanding basic syntax

Day 3-4: Basic Data Types and Variables

- Numbers (integers, floats)
- Strings
- Booleans
- Variables and assignment

Day 5-6: Basic Operators

- Arithmetic operators
- Comparison operators
- Logical operators
- Assignment operators

Day 7: Basic Input and Output

- `input()` function

- `print()` function
- String formatting

Day 8-9: Control Flow

- Conditional statements (`if`, `elif`, `else`)
- Loops (`for`, `while`)
- `break` and `continue` statements

Day 10-11: Functions

- Defining and calling functions
- Function arguments and return values
- Lambda functions

Day 12-14: Collections

- Lists
- Tuples
- Sets
- Dictionaries

Week 3-4: Intermediate Python

Day 15-17: Advanced Functions

- Recursion
- Decorators
- Generators

Day 18-20: Modules and Packages

- Importing modules

- Creating your own modules
- Standard library overview

Day 21-23: File Handling

- Reading and writing files
- Working with CSV and JSON files

Day 24-26: Exception Handling

- `try`, `except`, `finally`
- Custom exceptions

Day 27-28: Object-Oriented Programming (OOP)

- Classes and objects
- Inheritance
- Polymorphism

Day 29-30: More on OOP

- Encapsulation
- Class and static methods

Week 5-6: Advanced Topics

Day 31-33: Advanced Data Structures

- List comprehensions
- Dictionary comprehensions
- Sets and frozen sets

Day 34-36: Functional Programming

- Map, filter, and reduce functions
- Higher-order functions

Day 37-39: Working with Dates and Times

- `datetime` module
- Time arithmetic

Day 40-42: Regular Expressions

- `re` module
- Pattern matching

Day 43-45: Web Scraping

- Introduction to web scraping
- `requests` and `BeautifulSoup` modules

Day 46-48: Working with APIs

- Making API requests
- Handling JSON responses

Day 49-50: Data Analysis

- Introduction to `pandas`
- Basic data manipulation with `pandas`

Week 7-8: Specialized Libraries and Tools

Day 51-53: Data Visualization

- Introduction to `matplotlib`
- Plotting basic graphs

Day 54-56: Advanced Data Visualization

- `seaborn` for statistical plots
- Plot customization

Day 57-59: NumPy for Numerical Computing

- Arrays and matrices
- Basic operations with `NumPy`

Day 60-62: Introduction to Machine Learning

- Basic concepts of machine learning
- `scikit-learn` basics

Day 63-65: Working with Databases

- Connecting to a database using `sqlite3`
- Performing CRUD operations

Day 66-67: GUI Programming

- Introduction to `tkinter`
- Building simple GUI applications

Day 68-70: Testing and Debugging

- Writing tests with `unittest`
- Debugging techniques and tools

Week 9-10: Data Science Focus

Day 71-73: Introduction to Data Science

- Overview of data science workflow

- Importance of data science in various fields

Day 74-76: Data Wrangling

- Cleaning and preprocessing data with `pandas`
- Handling missing values, duplicates, and data types

Day 77-79: Exploratory Data Analysis (EDA)

- Descriptive statistics
- Data visualization techniques for EDA

Day 80-82: Statistical Analysis

- Probability and statistics basics
- Hypothesis testing

Day 83-85: Machine Learning Algorithms

- Supervised learning: Regression and Classification
- Unsupervised learning: Clustering and Dimensionality Reduction

Day 86-88: Model Evaluation and Selection

- Train-test split
- Cross-validation
- Evaluation metrics (accuracy, precision, recall, F1 score)

Day 89-90: Capstone Project

- Choose a data science project that combines all the concepts learned
- Design, implement, and document the project

This extended syllabus integrates essential data science topics into your Python learning journey. By the end of this 90-day plan, you'll be well-versed in both Python programming and fundamental data science techniques, preparing you for practical applications in the field. Adjust the pace as needed to ensure thorough understanding and practice.