PYTHON FULL STACK

DURATION
90 Days

COURSE OVERVIEW

The Python Full Stack Development Program is a comprehensive, industry-oriented course designed to build strong expertise in Python programming, frontend development, backend frameworks, databases, and real-world application development. This program focuses on hands-on learning, projects, and practical implementation, preparing learners for full stack developer roles.

COURSE CURRICULUM

MODULE 1: CORE PYTHON FUNDAMENTALS

PYTHON BASICS

- Introduction to Python
- Working with Python Software
- Python Language Fundamentals
- Modes of Working with Python
- Basic Input & Output Operations
- Operators and Expressions
- Python Data Types

CONTROL STRUCTURES

- Conditional Statements
- Looping Statements
- Flow Control Statements

DATA STRUCTURES

- Strings and String Operations
- Bytes, ByteArray & Range Data Types
- Lists and List Operations
- Tuples and Tuple Operations
- Sets & Frozensets
- Dictionaries and Dictionary Operations
- Comprehensions (List, Dictionary, Set)
- NoneType

FUNCTIONS & MODULES

- Functions in Python
- Modules and Packages
- Exception Handling
- Regular Expressions (re module)
- File & Stream Handling
- Collections Module

MODULE 2: ADVANCED PYTHON

- Object-Oriented Programming (OOPs)
- OS Module
- Multithreading
- Python Logging
- Date & Time Module
- Garbage Collection
- Python Database Connectivity (PDBC)
- Network & Socket Programming
- GUI Development with Tkinter & Turtle

MODULE 3: NUMPY – NUMERICAL COMPUTING

- Introduction to NumPy
- Creating NumPy Arrays
- Array Attributes & Data Types
- View vs Copy
- Indexing, Slicing & Advanced Indexing
- Iterating over ndarrays
- Arithmetic Operations & Broadcasting
- Array Manipulation Functions
- Joining & Splitting Arrays
- Sorting & Searching Elements
- Inserting & Deleting Elements
- Matrix Operations & dot() Function
- Linear Algebra (linalg Module)
- NumPy I/O Operations
- Statistical Functions
- Mathematical Functions
- Finding Unique Elements & Counts

MODULE 4: PANDAS – DATA ANALYSIS

- Introduction & Environment Setup
- Data Structures: Series, DataFrame, Panel
- Basic Functionality
- Descriptive Statistics
- Function Application
- Reindexing & Iteration
- Sorting
- Working with Text Data
- Indexing & Selecting Data
- Statistical & Window Functions
- Aggregations
- Handling Missing Data
- GroupBy Operations
- Merging, Joining & Concatenation

- Date & Time Functionality
- Timedelta & Categorical Data
- Data Visualization
- Input/Output Tools
- Sparse Data
- Comparison with SQL
- Caveats & Best Practices

MODULE 5: MATPLOTLIB – DATA VISUALIZATION

- Introduction to Matplotlib
- Line Plots (Basic & Advanced)
- Grid Lines & Legends
- Axis Limits & Scaling
- Plot Styling
- Procedural vs Object-Oriented Plotting
- Bar Charts, Pie Charts & Histograms
- Scatter Plots
- Subplots
- Geographic Data Visualization
- 3D Plotting
- Animations

MODULE 6: HTML5 – WEB STRUCTURE

- Introduction to HTML & Web Structure
- HTML Elements & Tags
- HTML Document Structure
- Head & Body
- Types of Tags
- Core HTML Elements
- Text, Links, Images & Buttons
- Tables & Attributes
- Lists (Ordered, Unordered, Description)
- Forms & Input Elements
- Media Elements (Audio & Video)
- Semantic Elements

MODULE 7: CSS3 – STYLING & LAYOUT

CSS BASICS

- Introduction & Purpose of CSS
- CSS Syntax & Rules

SELECTORS

- Universal, Tag, Class, ID
- Group, Descendant & Child Selectors

BOX MODEL

- Margin, Padding, Border
- Width & Height

LAYOUT TECHNIQUES

- Positioning (Static, Relative, Absolute, Fixed, Sticky)
- Flexbox
- Grid Layout

RESPONSIVE DESIGN

- Positioning (Static, Relative, Absolute, Fixed, Sticky)
- Flexbox
- Grid Layout

EFFECTS

- Backgrounds & Colors
- Transforms
- Transitions
- Box Shadows

MODULE 8: BOOTSTRAP – RESPONSIVE UI DEVELOPMENT

- Introduction to Bootstrap
- Grid System
- Typography

- Buttons & Cards
- Forms & Tables
- Pagination
- Modal & Carousel
- Utility Classes
- Responsive Layout Design

MODULE 9: JAVASCRIPT – PROGRAMMING FUNDAMENTALS

BASICS

- Introduction to JavaScript
- Variables & Data Types
- Operators & Control Statements
- Loops

FUNCTIONS

- Function Declaration
- Arrow Functions
- Callbacks & Higher Order Functions
- Async Functions

ARRAYS & OBJECTS

- CRUD Operations
- Array Methods
- Object Methods
- Spread & Rest Operators
- Destructuring

DOM MANIPULATION

- DOM Structure
- Selecting & Modifying Elements
- Creating & Removing Elements

ADVANCED JAVASCRIPT

- Scope & Closures
- This Keyword

- Call, Apply & Bind
- Promises
- Async/Await
- Fetch API
- JavaScript Modules

MODULE 10: REACT JS – FRONTEND FRAMEWORK

- Introduction to React
- Virtual DOM & JSX
- Components
- Props & State
- React Hooks
- Routing with React Router
- Forms & Controlled Components
- API Integration (Axios)
- Context API
- Redux Basics
- Performance Optimization
- Lazy Loading

MODULE 11: DJANGO & REST API

- Introduction to Django
- Project Setup & First Application
- Templates & Static Files
- Views & URLs
- Models & Databases
- Forms & Validation
- Session Management
- Authentication & Authorization
- Class-Based & Function-Based Views
- Django ORM
- Advanced Models
- Django REST Framework
- Testing & Debugging

- Caching & Performance Optimization
- Security Best Practices
- Signals & Asynchronous Tasks
- WebSockets & Real-Time Communication
- Deployment & Production Setup
- Project Development & Refinement

MODULE 12: FLASK FRAMEWORK

- Introduction to Flask
- Flask Application Structure
- Forms & User Input
- Database Integration
- Authentication & Authorization
- RESTful APIs
- Deployment & Scaling
- Advanced Flask Concepts

MODULE 13: DATABASE MANAGEMENT

- MySQL Fundamentals
- Database Design
- CRUD Operations
- Joins & Subqueries
- Integration with Python Applications

CAREER OUTCOMES

AFTER COMPLETING THIS COURSE, LEARNERS CAN APPLY FOR ROLES SUCH AS

- Python Full Stack Developer
- Backend Developer
- Web Application Developer
- Software Engineer
- API Developer