AI COURSE MODULE

# Introduction to Course:

Python Programming (Beginner – Advance – Expert) program is a comprehensive program designed to enable students from different parts of the country to learn Python programming to get job ready. The students enrolled into the program would learn the below skills.

1. *Python Core Programming Skills*
2. *Resume Writing & Interviewing Skills*
3. *Job Application Skills*
4. *Understanding of Job portals, Social Media and other avenues for job application*

The students will also get to interact with industry experts and experienced professionals for motivational purposes. The program has been designed to be delivered online using the EduVahini Online Learning Platform. The platform approach will enable students to attend not only Live classes but also help them get back to those lessons later at their own convenient time.

This comprehensive course also blended with periodic quizzes, assignments, and practice questionnaires which helps tutors to understand student’s capability. Course feedback mechanism will allow all the stakeholders to monitor the course delivery. Platform, through messaging & forum mechanism, gives opportunity to interact with tutor anytime to resolve doubts. Reporting mechanism allows management to track the record of each & every students their monitor their performance on daily basis.

# Python Course Content Structure:

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| **Weeks** | **Level** | **Chapter** | **Topics** | **Coverage** |
| 1 | Course basic | Introduction | Overview | Introduction to Computers:  Operating Systems:  Computer Hardware:  Software:  Algorithms and Programming:  Programming Languages:  Problem-Solving:  Internet and Networking:  Data and Databases:  Ethical and Social Implications:  Types of application  Full Stack Development in Python |
|  |  |  |  | Python, Welcome to Eduvahini Platform  Python, IDE (PyCharm / Jupyter), Andriod Programming, Write Your First Code |
|  |  |  | Introduction &  Basic Task and simple sample code .. |
| **2** | Python Basics | Introduction & Installation |  |
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| **3** | Python Basics | Data Types & Data Structures | Data Types  Data Structures | Input, Output, Boolean,  Numbers, Float, Character, String, Arithmetic Operations  Array, Dictionary, Files, Lists, Tuple, Sets |
| **4** | Python Basics | Control Structures, File Exception Handling & Functions | Control Structures  File & Exception Handling | If-Else, For, While  Reading, Writing, Appending, Adding, Errors & Exceptions |

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|  |  | | Functions | Making, Passing, Returning  Values & arguments, Dictionary, Tuple, List, String & Numeric Functions |
| **5** | Python Basics | Introduction to Database & Web Servers | Introduction to Database  Introduction to Web Servers | Database, MS Sql Database,  Installation, Creating, Searching, Writing, Reading database Tables  Introduction, Importance, Working of Web Servers & Related Services |
| **6** | **(Mini Project) on Basic Level + Job Discussions Webinars** | | | |
| **7** | Python Advance | Object Oriented Programming | Object Oriented Programming | Class, Attributes, Methods, Functions, Inheritance, Multiple & Multilevel Inheritance, Operator Overloading, Data Hiding |
| **8** | Python Advance | Algorithms | Algorithms | Introduction, Binary Search Tree, AVL Tree, Hashing, Sorting, Search, Shortest Paths, Dynamic Programming |
|  |  |  | Advance Functional Programming | Lambdas, Maps, Filters, Generators, Decorator |
| **9** | Python Advance | Advance Functional Programming, Data Structures, Regular Expressions, Modules | Advance Data Structures  Regular Expressions | Numbers, Strings, Sets, Dictionaries, Lists  Search, Find, Replace, Metacharactors, Groups |
|  |  |  | Modules | Modules, Packages, Pip, Pypi, Counter, Defaultdict, Ordweredict, Namedtuple, Debugger |
| **10** | Python Advance | Libraries | Numpy  Pandas | Coverting, Arrays, Indexing, Slicing, Iterating, Stacking, Splitting  Indexing, Splitting, Multiindexing, Missing Data, Grouping, Time series, Merge, Plotting, Data I/O, Styling, Time Deltas, Scaling, Sparse Data Structures |
| **11** | **(Mini Project) on Advance Level + Job Discussions Webinars** | | | |

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| **12** | Python Expert | Introduction to GUI & Database Apps | GUI using Tkinter / Jinja  Building Database Apps | Widgets, Frames, Layouts, Buttons, Classes, Drop Downs, Toolbars, Status Bar, Message Box, Drawings  App Layouting, Creating, Linking, Deleting, Searching Database & Entries, Virtual Environment on Windows |
| **13** | Python Expert | Data Analysis | Data Analysis using dictionaries & Libraries | Installing Tools, Converting Dict to series, Data Frames, Column Sequencing, Transposing, Reindexing, Arithmetic Operations, Sorting, Handling Duplicates, Loading File Data, Analysing, Broadcasting, Iterating (nditer) & Plotting Data (Matplolib), scaborn |
|  |  |  | Introduction & Installation of Django | Introduction & Installation |
| **14** | Python Expert | Web Application Using Django | Making Web Application | Creating Apps, Views, Tables, Migrations, Admin Panel, Connecting to Databases, Templates, Errors, URL, Namespaces, Navigation Bars, Statics Files, Generic Views, Uploading & Downloading Data, Mapping, Key Concept |
| **15** | Python Expert | REST Framework API's Using Python & Django | Introduction to API's  Building API using Django's REST Framework | API & its Applications  API Endpoints, Adding Image Field, Filtering, Search Functionality, API Authentication |
| **16** | **(Mini Project) on Expert Level + Job Discussions Webinars** | | | |
| **17** | **Final Project & Final Test** | | | |
| **18** | **Resume Writing + Mock Interview** | | | |
| **19** | **Issuing Certificates** | | | |

**Python Course Assessment Structure:**

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| **Python Programming Level** | **Chapter** | **Practice Assignments (Non Graded)** | **Programming Assessments (Graded)** | **Quizzes (Graded)** |
| **BASIC PYTHON** | 1. Introduction & Installation | 2 | 0 | 1 |
| 2. Data Types & Data Structures | 10 | 2 | 1 |
| 3. Control Structures, File Exception Handling & Functions | 15 | 3 | 1 |
| 4. Introduction to Database & Web Servers | 10 | 1 | 1 |
| *Mini Project & Quiz* | *0* | *1* | *1* |
| **ADVANCE PYTHON** | 5. Object Oriented Programming | 10 | 2 | 1 |
| 6. Algorithms | 10 | 2 | 1 |
| 7. Advance Functional Programming, Data Structures, Regular Expressions, Modules & Directories | 10 | 2 | 1 |
| 8. Libraries | 10 | 2 | 1 |
| *Mini Project & Quiz* | *0* | *1* | *1* |
| **EXPERT PYTHON** | 9. Introduction to GUI & Database Apps | 10 | 0 | 1 |
| 10. Data Analysis | 10 | 3 | 1 |
| 11. Web Application Using Django | 10 | 1 | 1 |
| 12. REST Framework API's Using Python & Django | 10 | 2 | 1 |
| *Mini Project & Quiz* | *0* | *1* | *1* |
| *Final Project & Quiz* | | *0* | *1* | *1* |
| *Resume Writing & Self Promotion Video* | | *0* | *1* | *0* |
| *Mock Interview* | | *0* | *1* | *0* |

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| *Aptitude Test* | *0* | *0* | *1* |
| **Total Course Assignments** | **117** | **26** | **17** |