**PARUL UNIVERSITY - FACULTY OF ENGINEERING & TECHNOLOGY**

**Department of Computer Science & Engineering**

**SYLLABUS FOR 3rd BTech PROGRAMME (AI)**

**Python Programming Workshop-1 ()**

**Type of Course:** B.Tech

**Prerequisite:** Fundamentals of programming & Data Structures.

**Rationale:** Python is an interpreter, high-level, general-purpose programming language. Python's design philosophy emphasizes code readability with its notable use of significant whitespace. Its [language constructs](https://en.wikipedia.org/wiki/Language_construct) and [object-oriented](https://en.wikipedia.org/wiki/Object-oriented_programming) approach aim to help programmers write clear, logical code for small and large-scale projects.

# Teaching and Examination Scheme:

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Teaching Scheme** | | | **Credit** | **Examination Scheme** | | | | | **Total** |
| **Lect Hrs/ Week** | **Tut Hrs/ Week** | **Lab Hrs/ Week** | **External** | | **Internal** | | |
| **T** | **P** | **T** | **CE** | **P** |
| 0 | 0 | 2 | 1 | 00 | 60 | 00 | 00 | 40 | 100 |

**Lect** - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

# Course Outcome:

After learning the course the students shall be able to:

1. Interpret the fundamental Python syntax and semantics and be fluent in the use of Python control flow statements.
2. Express proficiency in the handling of strings and functions.
3. Determine the methods to create and manipulate Python programs by utilizing the data structures like lists, dictionaries, tuples, and sets.
4. Identify the commonly used operations involving file systems and regular expressions.
5. Articulate the Object-Oriented Programming concepts such as encapsulation, inheritance, and polymorphism as used in Python.

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| SET 1 | INTRODUCTION TO PYTHON |
| A. | What is Python?Installation of the python environment (anaconda). |
| B. | Python keywords, comments, and indentation. |
| C. | Python data types. |
| D. | Math and numbers in python. |
| SET 2 | CONTROL STATEMENTS (Include nested and at least 3 examples for A, B, C) |
| A. | If-else and if-elif-else |
| B. | While-loops |
| C. | For loops |
| D. | Break, continue, pass, and return. |
| E. | Pointers in python |
| SET 3 | Functions in python |
| A. | Inbuilt functions in python. |
| B. | User-defined functions (with and without argument & with and without return type) |
| C. | Lambda faction in python. |
| SET 4 | List, Tuples, Dictionaries & Sets in python. |
| SET 5 | Input and output in python |
| A. | Inputs and outputs from the file. |
| B. | Operations on files. |
| C. | Modes and methods of files. |
| SET 6 | EXCEPTION HANDLING (compile time and run time) |
| A. | Try-except-finally |
| B. | Try-except-else |
| SET 7 | Decorators in python |
| SET 8 | Regular expression (REGEX) in python |
| SET 9 | DB-API in python |
| A. | DML operations |
| B. | DDL operations |
| SET 10 | Object oriented programming in python |
| A. | Inheritance |
| B. | Polymorphism |
| C. | Encapsulation and data abstraction |