ADD-ON COURSES

Title of the Course	**:**	**Introduction to Python Programming**
Course Code	**:**	**MTHADD 1.1**
Nature of the Course	**:**	**ADD-ON Course**
Total Credits	**:**	**02(L=1, T=1, P=2)**
Distribution of Marks	**:**	**35 (End Sem) + 15 (In-Sem)**

Course Objectives: The objectives of this Course are-

- Understand Python syntax and semantics for basic programming constructs.
- Be able to write Python scripts to solve real-world problems.
- Gain familiarity with Python's standard libraries and their applications.
- Develop debugging and problem-solving skills in a programming context.

UNITS	CONTENTS	L	T	P	Total Hours
I (5 Marks)	Overview of Python; Installing Python; Writing and executing Python scripts; Python IDEs and text editors.	01	01	2	04
II (5 Marks)	Understanding variables and identifiers; Numeric types (int, float, complex); String operations and methods; Boolean values; Input and output operations.	01	01	2	04
III (5 Marks)	Conditional statements (if, elseif, else); Looping structures (for loops, while loops); Controlling loop execution (break, continue, pass).	01	01	2	04
IV (5 Marks)	Defining and calling functions; Function arguments and return values; Scope and lifetime of variables; Importing modules and using standard library modules.	01	01	2	04
V (5 Marks)	List operations and methods; Tuple basics and operations; Dictionary keys, values, items, and methods; Set operations and methods.	01	01	2	04
VI (5 Marks)	Reading from and writing to files; Handling file exceptions; try-except blocks for error handling; Managing resources with 'with' statement.	01	01	2	04
VII (5 Marks)	Using numpy for numerical operations; Introduction to pandas for data manipulation; Basic data visualization with matplotlib; Overview of additional libraries for further exploration (e.g., scipy, seaborn).	01	01	2	04
	Total	**07**	**07**	**14**	**28**

Where, L: Lectures T: Tutorials P: Practicals

MODES OF IN-SEMESTER ASSESSMENT: (15 Marks)

- One Internal Examination - **10 Marks**
- Others (any one or more) - **05 Marks**
    - Seminar presentation on any of the relevant topics
    - Assignment
    - Group Discussion
    - Quiz
    - Viva-Voce

LEARNING OUTCOMES:

After the completion of this course, the learner will be able to:

- Use variables, operators, and data types effectively in Python.
- Control program flow using conditional statements and loops.
- Create and use functions to organize code.
- Manipulate data using Python's lists, tuples, dictionaries, and sets.
- Apply basic file input/output operations.
- Understand error handling and debugging techniques.

SUGGESTED READINGS:

- Primary Textbook: "Python Crash Course" by Eric Matthes.
- Al Sweigart, "Automate the Boring Stuff with Python", 2015, No Starch Press.
- Brett Slatkin, "Effective Python: 90 Specific Ways to Write Better Python", 2015, Addison-Wesley Professional.
- Luciano Ramalho, "Fluent Python", 2015, O'Reilly Media.
- Mark Lutz, "Learning Python, 5th Edition", 2013, O'Reilly Media.
- Online Resources: Python's official documentation and tutorials available on the Python website.