MSC (CA&IT) - Semester: II

(Effective from year 2023-24)

Course Code:	CAIT-201	**Course Title:**	Programming with Python
Course Credits:	**02**	**Hour of Teaching/Week:**	02
Internal Assessment Marks:	**25**	**External Exam Marks:**	25
Exam Duration	**2Hrs**		

Unit	**Contents**
1.	Introduction and Overview: Overview of Python Programming: Structure of a Python Program, Elements of Python, Python Interpreter, Python shell, Indentation. Atoms, Identifiers and keywords, Literals, Strings. Operators and Statements: Operators (Arithmetic operator, Relational operator, Logical or Boolean operator, Assignment, Operator, Ternary operator, Bit wise operator, Increment or Decrement operator). Creating Python Programs: Input and Output Statements. Decision making and Branching: Control statements (Branching, Looping, Conditional Statement, Difference between break, continue and pass, default arguments. Defining Functions. Object in Python: Tuples, lists, dictionaries, methods, identifiers, modifying objects, aliasing, mutability
2.	Basics of Object Oriented Programming in python, classes and object, __init__() , self keyword, functions using class, functions with default arguments using class Pandas Pandas Introduction, Data frame , reading files (json , csv), Pandas - Analyzing Data-Frames , cleaning Empty Cells, cleaning Wrong Format, Cleaning Wrong Data, Removing Duplicates, Data Correlations, Merging more than one data frame together, NumPy Arrays, indexing, slicing, copy as view, shape, reshape, iterating, join, split, search, sort, filter, product, LCM, GCD , Trigonometric, Set Operation Matplotlib Introduction to matplotlib , plotting, marker, line, labels, grid, subplot, scatter, bars, histograms, pie charts.

Text Books and References:

1 T. Budd, Exploring Python, TMH, 1st Ed, 2011

2. Python Tutorial/Documentation www.python.or 2015

3. Allen Downey, Jeffrey Elkner, Chris Meyers, how to think like a computer scientist: learning with Python, Freely available online.2012

4. https://nptel.ac.in/noc/courses/noc22/SEM1/noc22-cs31/

External Exam Format : As per Table 1.1, 1.2 and 1.3

MSC (CA&IT) - Semester: II

(Effective from year 2023-24)

Course Code:	CAIT-201-P	**Course Title:**	Lab: Practical Based on CAIT-201
Course Credits:	**02**	**Hour of Teaching/Week:**	04
Internal Assessment Marks:	**25**	**External Exam Marks:**	25
Exam Duration	**2Hrs**		

List of Sample Programs

1. Understanding IDLE: Installing, Running Programs, Saving and Loading Files

2. Understanding Python Operators.

3. Understanding Branching.

4. Understanding Looping.

5. Understanding Functions and Parameters.

6. Understanding Tuples, Lists, Dictionaries.

7. Understanding Mutability of various objects.

8. Understanding Recursion.

External Exam Format : As per Table 1.1, 1.2 and 1.3