CHRIST
(DEEMED TO BE UNIVERSITY)
BANGALORE · INDIA

DEPARTMENT - MATHEMATICS

Course Pack
FOR
INTRODUCTION TO PYTHON PROGRAMMING FOR MATHEMATICS-MAT351

MAT351 - INTRODUCTION TO PYTHON PROGRAMMING FOR MATHEMATICS

Total Teaching Hours For Semester : 30 **Total Teaching Hours For Semester : 2**

Max Marks : 50 **Credits : 2**

Course Objectives/Course Description:

The course *Introduction to Python Programming for Mathematics* is aimed at enabling the students to appreciate and understand core concepts of Mathematics with the help of Python programming language. It is designed with a learner-centric approach wherein the students will acquire mastery in the subject by using Python Programing language as tool.

Learning Outcome

On successful completion of the course, the students should be able to

Acquire proficiency in using Python

Demonstrate the use of Python to understand and interpret the concepts in Mathematics.

Unit-1 **Teaching Hours:30**

Proposed Topics

Working with Numbers in Python
Working with List or tuple in Python
Creating graphs with Matplotlib
Exploring Quadratic Function Visually
Exploring the Relationship between the Fibonacci Sequence and Golden Ratio
Summing a Series
Using Venn Diagrams to Visualize Relationships Between Sets
Verification of Continuity at a point
Area between two curves
Finding the length of the curve

Text Books And Reference Books:

Amit Saha, *Doing Math with Python: Use Programming to Explore Algebra, Statistics, Calculus, and More!* , no starch press:San Fransisco, 2015.

Essential Reading / Recommended Reading:

B E Shapiro, *Scientific Computation: Python Hacking for Math Junkies*, Sherwood Forest Books, 2015.

C Hill, Learning Scientific Programming with Python, Cambridge Univesity Press, 2016.

Additional Information

Only selected texts in the course elements will be tested for all examinations

Evaluation Pattern

The course is evaluated based on continuous internal assessments (CIA) and the lab e-record. The parameters for evaluation under each component and the mode of assessment are given below.

Component	**Parameter**	**Mode of Assessment**	**Maximum Points**
CIA I	Mastery of the concepts	Lab Assignments	**20**
CIA II	Conceptual clarity and analytical skills in solving problems in sequence and series.	Lab Exam - I	**10**
Lab Record	Systematic documentation of the lab sessions.	e - Record work	**07**
Attendance	Regularity and Punctuality	Lab attendance	**03** 95-100% : 3 90-94% : 2 85-89% : 1
CIA III	Proficiency in executing the commands appropriately, understand sequence, series and functions of a complex variable.	Lab Exam - II	**10**
Total			**50**