

Rayat Shikshan Sanstha's  
**Sadguru Gadage Maharaj College, Karad**  
(An Autonomous College)

**Department of Mathematics**

Organized  
**Eight Days**

**Hands on Training on Applications of Python Programming**  
(RUSA Sponsored) 2022-2023

**Report**

Eight days “**Hands-on Training on Applications of Python Programming**” was organized for B.Sc. III and M.Sc. II year students by the **Department of Mathematics** of **Sadguru Gadage Maharaj College, Karad** sponsored under **RUSA** from 16<sup>th</sup> to 25<sup>th</sup> January 2023. Mr. Suraj Mujawar (Technical Consultant at Vitesse, Pune) was the technical trainer for this training. Total 60 students were participated in this workshop. This workshop aimed to provide a strong hold in base of Python Programming.

Day wise schedule of the training workshop was as below:

Sr. No.	Day & Date	Time
1	Monday, 16/01/2023	Session I: 11.00 am - 1.00 pm Session II: 2.00 pm - 4.00 pm
2	Tuesday, 17/01/2023	Session I: 11.00 am - 1.00 pm Session II: 2.00 pm - 4.00 pm
3	Wednesday, 18/01/2023	Session I: 11.00 am - 1.00 pm Session II: 2.00 pm - 4.00 pm
4	Thursday, 19/01/2023	Session I: 11.00 am - 1.00 pm Session II: 2.00 pm - 4.00 pm
5	Friday, 20/01/2023	Session I: 11.00 am - 1.00 pm Session II: 2.00 pm - 4.00 pm
6	Monday, 23/01/2023	Session I: 11.00 am - 1.00 pm Session II: 2.00 pm - 4.00 pm
7	Tuesday, 24/01/2023	Session I: 11.00 am - 1.00 pm Session II: 2.00 pm - 4.00 pm
8	Wednesday, 25/01/2023	Session I: 11.00 am - 1.00 pm Session II: 2.00 pm - 4.00 pm

The workshop and the Day 1's Session 1 started with the welcome note by HOD of Mathematics Department, Prof. S. A. Patil Sir. He talked to the students about Python Programming and its related fields where opportunities are abundant in the industry. Prof. S. A. Patil welcomed the participants and also introduced the resource person.

The training resource person Mr. Suraj Mujawar, initially focused on fundamental concepts of base of Python programming. Firstly he introduced the Python software to students, and then he gave information about various IDE's of Python. He taught how to download and install various IDE's on various operating systems. In Session 2 Mr. Mujawar delivered lecture on basic syntax of python programming and how to use it for coding. The Latex and Markdown were also discussed.

On Day 2, in the Session 1 the resource person Mr. Mujawar sir introduced various Python operators such as arithmetic, assignment, comparison, logical, identity, membership and bitwise operator to students followed by the practical of the same. In the Session 2 students learned about the data types in Python. Various modules in python were introduced.

On Day 3, the Session 1 continues with the modules. Mr. Mujawar sir taught students how to use the modules in Python in programming. Students learned about the modules names sympy, numpy, math, matplotlib, etc. the Session 2 students did the practical using modules. They successfully tried to write codes for mathematical operations such as differentiation and integration.

The Session 1 of Day 4 began with learning functions in Python. In detail, students learned how to define functions, parts of functions, parameters and arguments of functions, etc. students practiced defining functions for finding Fibonacci series, Armstrong number, factorial of a number and many more. In the Session 2 the conditional statements like if statement, else statement and elif statement were taught to students by the resource person. Program codes were written by students using the conditional statements to check even/odd numbers, prime numbers, etc.

On Day 5, in the Session 1 the resource person Mr. Suraj Mujawar gave lecture on how to plot graphs in python by using the matplotlib. Students learned to draw scatter plots, plotting graphs of explicitly defined functions, plotting multiple graphs together, parametric plots and etc. In Session 2 the practical of the same were performed by the students.

On Day 6, in Session 1 students learned various mathematical phenomena using Python. Students learned to write code for Numerical Differentiation, how to solve First Order Equations, various Numerical Method such as Bisection Method, Gauss-Elimination Method, Gauss-Jordan Method Etc. The Session 2 continued with Solving Linear Systems, Eigen values, Eigen Vectors. Students also learned the Mathematical Python.

On Day 7, The Session 1 started with introduction to File Handling in Python. In that particularly students learned about working of open(), read(), write(), append(), with(), split(), etc. functions which are very useful while File Handling in Python. The session 2 was about doubt clearing of students. The resource person Mr. Mujawar Sir solved the problems faced by the students with practical. He also cleared the doubts regarding the coding.

On Day 8, In Session 1 Mr. Mujawar Sir, taught various classes available in Python module. Students learned about how to define classes, objects and modules in Python, how to use classes, objects and modules in Python in a code. They also learned documenting the same. In Session 2 a test was held. Students gave seminar on what they have learned in the workshop about python.

At the end of the session, HOD Prof. S. A. Patil Sir distributed certificates to the students of B. Sc. III and M. Sc. II year students. Some of the students shared their experiences of the training. Vote of thanks was delivered by the Hands-on Training co-ordinator Mr. S. D. Agarwal Sir at the end of the session.

  
**Head**  
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