



# Mastering Python: Beyond the Basics with Pipeline Engineering 4 Weeks Core Course

Streamline Your Data, Transform Your Research With Python





## Welcome to Dr Omics Labs -Your Gateway to Genomic Excellence!

DrOmics Research Lab, a prominent research facility, offers comprehensive genomics research solutions and Bioinformatics services worldwide from its base in India. Headed Deepshikha Satish. PhD by (Translational Bioinformatics), our team comprises dedicated, keen-eved, young, and enthusiastic Research Professionals. Our primary goal is to deliver specialized training programs for professionals, PhD, and MSc students in advanced technologies and fields. Our mission is to equip the future generation of scientists with the essential knowledge, skills, and hands-on experience to excel in their research and drive progress in the genomics sector.

Our training programs encompass a range of biotechnology subjects including molecular biology, genomics, proteomics, bioinformatics, and genetic engineering. Through workshops, seminars, hands-on sessions, and collaborative projects, students gain hands-on experience to understand advanced techniques and methodologies in biotech research.

The programs are structured to promote a cooperative and engaging learning atmosphere. Students are urged to join discussions, exchange ideas, and partake in practical experiments. Moreover, mentorship opportunities are available, enabling students to receive advice and assistance from seasoned experts as they progress through their training.





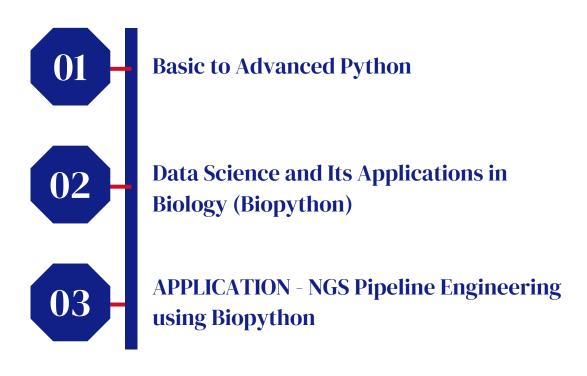
## Python Programming Core Course Highlights

Embark on a transformative journey into the intricate world of RNA and genomics. Our comprehensive course is designed to provide you with a profound understanding of the fundamental concepts and advanced techniques in Ribo-nucleOmics.

- Streamline data analysis with Python's powerful libraries like NumPy and Pandas.
- Visualize biological data effectively using matplotlib and seaborn plotting tools.
- Harness the flexibility of Python to automate repetitive tasks in bioinformatics workflows.



## **Course Overview**



**Duration: 4 Weeks** 



## **Module I:**Basic to Advanced Python

- Variables, Data Types, and Operators
- Control Flow and Looping Constructs
- Functions and Modules
- Data Structures
- File handling

#### **Module II:**

## Data Science and Its Applications in Biology(Biopython)

- Sequence Handling (Reading, Writing, and Manipulating Sequences)
- Sequence Alignment (Pairwise and Multiple Sequence Alignment)
- Biological Databases Access (NCBI Entrez, UniProt, etc.)
- Phylogenetics (Building and Analyzing Phylogenetic Trees)

### **Module III:**

# APPLICATION - NGS Pipeline Engineering using Biopython

- Preprocessing of Next-Generation Sequencing (NGS) Data
- QC and Filtering of NGS Reads, Seq alignment
- Variant Calling and Annotation
- Introduction of Machine Learning



# By the conclusion of this course, participants will have acquired the following proficiencies:

- Developing Python code to effectively prepare, process, analyze, and visualize biological data.
- Crafting Python scripts tailored to bioinformatics pipelines to automate data workflows.
- Grasping the fundamentals of machine learning using Python within the context of bioinformatics applications.



## What Sets Us Apart?

- Practical Focus: Dive into hands-on training for real-world experience.
- Expert Instruction: Learn from industry professionals sharing real insights.
- **Personalized Learning:** Tailored to your pace and skill level.
- Career Support: Get guidance
- Community Engagement: Join a supportive network of learners and professionals.
- Updated Curriculum: Stay ahead with the latest trends and skills.



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**OUR CERTIFICATIONS & GRANTS** 













