

Unlocking Insights: A Python Programming Journey for Data Science



CONDUCTED BY

DEPARTMENT OF COMPUTER APPLICATION

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This course is designed for anyone interested in learning the fundamentals of data science using Python, a powerful programming language widely used in this field. Whether you're a complete beginner or have some programming experience, this course will equip you with the skills to explore, analyze, and interpret data to gain valuable insights.

What will you learn?

- **Python Programming Basics:**
 - Learn the fundamental syntax, data structures (lists, dictionaries, etc.), control flow (loops, conditionals), and functions in Python.
- **Data Manipulation with Pandas:**
 - Discover Pandas, a popular library for data analysis. You'll learn how to import, clean, explore, and manipulate various data formats (CSV, Excel, etc.)
- **Data Visualization with Matplotlib and Seaborn:**
 - Master the art of data visualization using Matplotlib and Seaborn libraries. You'll create informative charts and graphs to effectively communicate your findings.
- **Introduction to Machine Learning:**
 - Get introduced to the core concepts of machine learning, including supervised and unsupervised learning algorithms. Explore basic implementations to understand how machines can "learn" from data.
- **Hands-on Coding Projects:**
 - Apply your newfound skills through practical coding exercises and mini-projects, solidifying your understanding of data science concepts.

Course Structure:

The course will follow a logical progression, starting with Python basics and gradually building your skills towards data analysis and visualization.

- **Module 1: Introduction to Python**
 - Setting up your development environment
 - Variables, data types, and operators
 - Control flow statements (loops and conditionals)
 - Functions
- **Module 2: Data Analysis with Pandas**
 - Introduction to Pandas library
 - Importing and working with data (CSV, Excel)

- Data cleaning and manipulation
- Exploratory data analysis (EDA) techniques
- **Module 3: Data Visualization with Matplotlib & Seaborn**
 - Introduction to Matplotlib and Seaborn libraries
 - Creating various chart types (line charts, bar charts, histograms)
 - Data visualization best practices
- **Module 4: Introduction to Machine Learning**
 - Supervised vs. Unsupervised learning
 - Understanding basic machine learning algorithms (e.g., Linear Regression)
 - Hands-on implementation of simple machine learning models in Python

Why Python for Data Science?

Python is a popular choice for data science due to several reasons:

- **Easy to Learn:** Python's syntax is clear and readable, making it approachable for beginners.
- **Versatility:** Python has a vast array of libraries specifically designed for data science tasks (Pandas, NumPy, Scikit-learn, etc.).
- **Large and Active Community:** A large and active community provides extensive resources, tutorials, and support for Python data science enthusiasts.

What do you need?

- A computer with internet access
- A text editor or Integrated Development Environment (IDE) for writing Python code (e.g., Visual Studio Code, PyCharm)
- Curiosity and a desire to learn!