

Here's a structured and detailed **Python for Data Science Roadmap** that you can use for your daily YouTube series. It starts from basics and gradually advances to complex topics, perfect for consistent uploads.

Python for Data Science Roadmap (YouTube Series)

Phase 1: Basics of Python (Week 1)

1. **Day 1:** Introduction to Python (What, Why, and How?)
2. **Day 2:** Installing Python and IDE Setup (Anaconda, Jupyter Notebook)
3. **Day 3:** Variables, Data Types, and Basic Operations
4. **Day 4:** Conditional Statements (if-else) and Loops (for, while)
5. **Day 5:** Functions in Python (Built-in and User-defined)
6. **Day 6:** Python Data Structures (List, Tuple, Dictionary, Set)
7. **Day 7:** Practice Problems and Recap

Phase 2: Python Libraries for Data Science (Week 2-3)

Week 2: NumPy Basics

8. **Day 8:** Introduction to NumPy (Why Use NumPy?)
9. **Day 9:** Arrays, Array Operations, and Indexing
10. **Day 10:** Array Slicing and Reshaping
11. **Day 11:** Mathematical Operations with NumPy
12. **Day 12:** Practice Problems with NumPy

Week 3: Pandas Basics

13. **Day 13:** Introduction to Pandas (DataFrames and Series)
14. **Day 14:** Reading and Writing Data (CSV, Excel, etc.)
15. **Day 15:** Data Cleaning (Handling Missing Values, Duplicates)
16. **Day 16:** Data Manipulation (Sorting, Filtering, Grouping)
17. **Day 17:** Merging and Joining DataFrames
18. **Day 18:** Practice Problems with Pandas

Phase 3: Data Visualization (Week 4)

19. **Day 19:** Introduction to Data Visualization (Importance & Use Cases)
20. **Day 20:** Matplotlib Basics (Creating Line and Bar Charts)
21. **Day 21:** Advanced Matplotlib (Subplots, Customization)
22. **Day 22:** Introduction to Seaborn (Heatmaps, Pairplots, etc.)
23. **Day 23:** Plotly Basics (Interactive Visualizations)
24. **Day 24:** Dashboard Creation using Plotly
25. **Day 25:** Project: Visualizing a Dataset (EDA with Visualization)

Phase 4: Statistics and Probability (Week 5)

- 26. Day 26:** Basic Statistics (Mean, Median, Mode, Variance, Standard Deviation)
- 27. Day 27:** Probability Basics and Distributions
- 28. Day 28:** Hypothesis Testing (t-test, chi-square)
- 29. Day 29:** Correlation and Regression Analysis
- 30. Day 30:** Practice Problems and Recap

Phase 5: Machine Learning Basics with Python (Week 6-7)

Week 6: Scikit-learn Basics:

- 31. Day 31:** Introduction to Machine Learning and Workflow
- 32. Day 32:** Data Preprocessing (Scaling, Encoding)
- 33. Day 33:** Supervised Learning: Linear Regression
- 34. Day 34:** Supervised Learning: Logistic Regression
- 35. Day 35:** Practice Problems on Regression Models

Week 7: Classification and Clustering

- 36. Day 36:** Decision Trees and Random Forest
- 37. Day 37:** k-Nearest Neighbors (kNN)
- 38. Day 38:** Clustering: k-Means
- 39. Day 39:** Practice Problems on Classification and Clustering
- 40. Day 40:** Mini Project: Predicting Outcomes (Regression/Classification)

Phase 6: Capstone Project (Week 8)

- 41. Day 41:** Project Introduction (EDA, Data Cleaning)
- 42. Day 42:** Data Visualization for Insights
- 43. Day 43:** Feature Engineering and Model Building
- 44. Day 44:** Model Tuning and Validation
- 45. Day 45:** Final Deployment and Conclusion