1-Month Beginner ML + Data Science Learning Plan

This is a focused 4-week beginner-friendly learning plan designed to take you from basic Python to your first machine learning projects using NumPy, Pandas, and scikit-learn. It also includes Git and GitHub practice to help you build a strong portfolio.

Spend about 3-4 hours daily for best results. Commit and push your progress to GitHub weekly to activate your profile.

Resources links are included for each topic.

Week 1: Python + NumPy Basics

Day 1: Python basics refresh

- Review functions, lists, loops, dictionaries (use W3Schools or freeCodeCamp)
- Practice small Python exercises online or via notebooks

Day 2: Install Python, Jupyter, Git, and set up GitHub

- Install Python and Jupyter Notebook or Anaconda
- Install Git and create your GitHub account
- Initialize a learning repo on GitHub

Day 3: Introduction to NumPy

- Learn about NumPy arrays, shapes, and basic operations
- Use freeCodeCamp Data Analysis with Python video (first hour)

Day 4: NumPy Advanced

- Practice array slicing, indexing, broadcasting
- Try exercises from W3Schools NumPy tutorial

Day 5: NumPy Mini Project

- Create arrays, perform arithmetic operations
- Save your notebook and push to GitHub

Day 6: Python + NumPy Practice

- Solve small problems (e.g. matrix multiplication, mean/std calculation)
- Commit your progress to GitHub

Day 7: Rest or review day

- Revise previous topics
- Try coding challenges on HackerRank or LeetCode (easy level)

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Week 2: Pandas + Data Cleaning

Day 8: Introduction to Pandas

- Learn about Series and DataFrames
- Watch freeCodeCamp Pandas sections or Kaggle Pandas course

Day 9: Data Loading & Selection

- Load CSV files, select/filter rows and columns
- Try simple data manipulation exercises

Day 10: Data Cleaning

- Handle missing data, drop or fill NA
- Practice filtering and sorting data

Day 11: GroupBy and Aggregation

- Learn groupBy, aggregations, and pivot tables
- Do exercises from Kaggle or W3Schools

Day 12: Pandas Mini Project

- Analyze a simple dataset (e.g. student grades)
- Write a short summary of insights
- Push notebook to GitHub

Day 13: Practice + Visualization Intro

- Practice with more datasets
- Start learning Matplotlib basics

Day 14: Rest or review day

- Revise Pandas concepts
- Explore visualization tutorials

Week 3: Data Visualization + Intro to ML

Day 15: Matplotlib and Seaborn Basics

- Plot line, bar, scatter plots
- Follow freeCodeCamp or official Seaborn tutorial

Day 16: Advanced Visualization

- Create histograms, boxplots, pairplots
- Visualize real datasets

Day 17: Intro to Machine Learning Concepts

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- Learn basics of ML - supervised vs unsupervised
- Understand train-test split, model evaluation

Day 18: Linear Regression Theory

- Understand simple linear regression
- Watch freeCodeCamp ML videos

Day 19: Build Linear Regression Model

- Use scikit-learn to train a model on student marks dataset
- Evaluate model accuracy

Day 20: Practice + Project Improvement

- Improve your model
- Add plots and detailed README

Day 21: Rest or review day

- Review ML concepts
- Try small exercises on Kaggle

Week 4: Capstone Project + GitHub Polish

Day 22: Choose a Capstone Dataset/Project

- Pick a dataset you find interesting (Kaggle/UCI/data.gov.in)
- Define your project goals

Day 23: Data Cleaning and Exploration

- Apply Pandas techniques to clean and explore data
- Visualize key insights

Day 24: Model Building

- Try different ML models (linear regression, decision trees, etc.)
- Evaluate model performance

Day 25: Project Documentation

- Write clear README with project summary
- Add visualizations and model results

Day 26: GitHub Repo Polish

- Organize notebooks, add comments
- Create a project folder structure

Day 27: GitHub Profile Update

- Add project pins

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- Update profile README with skills and projects

Day 28: Final Review and Blog (Optional)

- Write a short blog post or learning summary
- Share your GitHub link on LinkedIn or with friends

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