🚀 Step-by-Step Roadmap to Master Machine Learning

1. 🧱 Python + Data Science Basics (1-2 weeks)

If you already know Python, just make sure you’re good with:

✅ Topics:

Lists, dictionaries, loops, functions

Numpy, Pandas, Matplotlib, Seaborn

Basic data cleaning, visualization

📚 Resources:

Codebasics YouTube playlists (you're already using this!)

Kaggle’s free Python & Pandas courses

Google Colab if you want to try without installing anything

2. 🔥 Core Machine Learning (3-5 weeks)

Learn the actual ML algorithms and when to use them.

✅ Topics:

Supervised vs. Unsupervised learning

Regression (Linear, Logistic)

Classification (KNN, SVM, Decision Trees, Random Forests)

Clustering (K-Means, DBSCAN)

Model evaluation (accuracy, confusion matrix, etc.)

📚 Resources:

Codebasics ML Playlist

Kaggle: Intro to ML

Book: Hands-On ML with Scikit-Learn, Keras & TensorFlow (Later, not now)

3. 🧠 Math for ML (along the way)

You don’t need to be a math god, just enough to understand what’s going on.

✅ Focus on:

Linear Algebra (vectors, matrices)

Statistics (mean, variance, distributions, probability)

Calculus (just basics, derivatives for optimization)

Gradient descent (how models learn)

📚 Resources:

YouTube: 3Blue1Brown (for visuals)

Khan Academy (Linear Algebra, Probability)

Book: Math for Machine Learning (optional)

4. 🛠 Real Projects (always!)

Start applying what you learn immediately. Build small projects like:

House Price Predictor

Iris Flower Classifier

Loan Approval Predictor

Titanic Survival Predictor

Movie Recommendation System

Stock Price Predictor

Push them to GitHub, and write READMEs. This builds your portfolio.

5. 🤖 Deep Learning (after ML basics)

Once you’re solid on ML, dive into Neural Networks.

✅ Topics:

Perceptrons, forward/backpropagation

TensorFlow or PyTorch (pick one)

CNNs (for images), RNNs (for sequences), LSTMs

Computer vision, NLP, and more

📚 Resources:

Deep Learning Specialization by Andrew Ng (Coursera)

FreeCodeCamp’s Deep Learning & PyTorch tutorials

Codebasics has deep learning playlists too

6. 🎓 Optional but Powerful

Kaggle competitions (great for real practice)

Learn Git + GitHub (version control)

Learn FastAPI or Flask to deploy ML models as APIs

Docker if you want to go devops

🎯 Pro Tips:

Practice is everything. Don’t just watch tutorials—code along!

Do projects—they build understanding AND your resume.

Write explanations of what you learn. Teach to understand.

Be consistent—1–2 hours a day beats 8 hours once a week.