ML DevOps Course Learning Path

Week 1 – Python Basics

Goal: Become comfortable with Python syntax

Day 1

- Install Python & VS Code
- Learn variables, data types
- Practice simple programs

Day 2

- Conditional statements (if/else)
- Loops (for, while)
- Solve 5 basic problems

Day 3

- Functions & arguments
- Return values
- Practice writing reusable functions

Day 4

- Lists, tuples, sets
- List comprehensions

Day 5

- Dictionaries
- Small mini-task: student marks dictionary

Weekend

- Revise all concepts

Week 2 – Linux & Git

Goal: Hands-on with OS and VCS

Day 1

- Linux file system basics
- Commands: ls, cd, mkdir, rm

Day 2

- File permissions
- Redirection & pipes
- Basic shell scripting

Day 3

- Git basics (init, add, commit)
- Create GitHub account

Day 4

- Push code to GitHub
- README writing basics

Day 5

- Branching & merging

Weekend

- Push a Python mini-project to GitHub

Week 3 – Data Analysis

Goal: Understand and Analyze data

Day 1

- NumPy basics
- Arrays & operations

Day 2

- Pandas: DataFrames & Series

Day 3

- Data cleaning (missing values, duplicates)

Day 4

- Data visualization (Matplotlib, Seaborn)

Day 5

- Mini-project: Analyze a CSV dataset

Weekend

- Improve visualizations
- Write insights in notebook

Week 4 – Machine Learning Basics

Goal: Train your first ML models

Day 1

- What is Machine Learning?
- Types of ML

Day 2

- Train-test split
- Linear Regression

Day 3

- Logistic Regression
- Classification basics

Day 4

- Decision Trees & KNN

Day 5

- Model evaluation metrics

Weekend

- Build & test a simple ML model

Week 5 – Software Engineering for ML

Goal: Write clean ML code

Day 1

- ML project folder structure

Day 2

- Modular coding (scripts vs notebooks)

Day 3

- Configuration files (YAML/JSON)

Day 4

- Unit testing basics (pytest)

Day 5

- Code formatting & documentation

Weekend

- Refactor the ML project properly

Week 6 – DevOps Fundamentals

Goal: Understand automation

Day 1

- What is DevOps?
- CI/CD concepts

Day 2

- GitHub Actions intro

Day 3

- Create a simple CI pipeline

Day 4

- Automate testing

Day 5

- CI for ML code

Weekend

- Add CI pipeline to GitHub repo

Week 7 – MLOps Concepts

Goal: Learn ML lifecycle management

Day 1

- What is MLOps?
- ML lifecycle stages

Day 2

- Data & model versioning concepts

Day 3

- Experiment tracking basics

Day 4

- MLflow tracking (parameters & metrics)

Day 5

- Compare experiments

Weekend

- Track experiments for an ML project

Week 8 – Model Deployment

Goal: Serve ML models

Day 1

- Model saving/loading

Day 2

- REST API basics

Day 3

- Build ML API using Flask/FastAPI

Day 4

- Test API using Postman

Day 5

- Error handling & validation

Weekend

- Deploy locally & test end-to-end

Week 9 – Docker

Goal: Containerize ML apps

Day 1

- Docker concepts

Day 2

- Dockerfile basics

Day 3

- Dockerize ML API

Day 4

- Docker volumes & ports

Day 5

- Best practices

Weekend

- Push Dockerized project to GitHub

Week 10 – Automation Pipelines

Goal: Automate ML workflows

Day 1

- Training pipelines overview

Day 2

- Automate training scripts

Day 3

- CI for ML pipelines

Day 4

- Model deployment automation

Day 5

- Failure handling

Weekend

- Build simple ML pipeline

Week 11 – Monitoring & Ethics

Goal: Maintain models responsibly

Day 1

- Model drift concepts

Day 2

- Logging predictions

Day 3

- Performance monitoring basics

Day 4

- Data privacy & ethics

Day 5

- Responsible AI discussion

Weekend

- Add logging to ML API

Week 12 – Capstone Project

Goal: Complete MLOps project

Day 1–2

- Problem selection & dataset

Day 3–4

- Model training + MLflow tracking

Day 5

- API + Docker
