■■■
■■■■■■

DALLOLLTECH SUMMER TRAINING

Python for AI & Production Systems

■■■
■■■■■■

WEEK 1: INTRODUCTION & COURSE OVERVIEW

■■■
■■■■■■

■ TABLE OF CONTENTS

■■■
■■■■■■

1. WELCOME MESSAGE

Welcome to the Python for AI & Production Systems summer training program at Dalloltech!

This course is designed to take you from a foundational level in Python to building complete, production-ready AI systems. Over the next 6 weeks, you will gain hands-on experience with the most in-demand technologies in the industry:

• Python
• SQL
• FastAPI
• PyTorch / TensorFlow

Whether you are aiming to become a Python developer, data engineer,

or AI engineer, this course will give you the practical skills and
project portfolio to succeed.

■■■

2. COURSE OVERVIEW

This comprehensive 6-week program bridges the gap between academic theory and real-world industry practice. You will not just learn concepts – you will build actual systems.

The course follows a logical progression:

Phase 1 (Weeks 1-2): Python Fundamentals & Data Handling
Phase 2 (Weeks 3-4): Data Science & API Development
Phase 3 (Weeks 5-6): AI/Deep Learning & Capstone Project

By the end of this course, you will have built an end-to-end AI application that you can showcase in your portfolio and discuss confidently in job interviews.

■■■

3. LEARNING OBJECTIVES

By the end of this 6-week program, you will be able to:

✓ Write clean, efficient Python code using best practices
✓ Manipulate and analyze data using NumPy and Pandas
✓ Design and query SQL databases
✓ Build REST APIs with FastAPI
✓ Create and train neural networks using PyTorch/TensorFlow
✓ Deploy AI models as production-ready services
✓ Document and present your work professionally

■■■

4. COURSE STRUCTURE (6 Weeks at a Glance)

■■■

■ WEEK 1: Python Fundamentals & Environment Setup ■
■ - Python syntax, data types, operators ■
■ - Conditional statements and loops ■

■ - Functions and modules ■

■ - Git/GitHub, VS Code, Jupyter Notebook ■

■ ■■ Lab: Number Guessing Game ■

■■■
■■■■■■■■■■■

■■■
■■■■■■■■■■■

■ WEEK 2: Data Handling & SQL ■

■ - Data structures (Lists, Tuples, Dictionaries, Sets) ■

■ - File I/O (CSV, JSON) ■

■ - Object-Oriented Programming (OOP) ■

■ - SQL queries, joins, and SQLAlchemy ■

■ ■■ Lab: Expense Tracker with Database ■

■■■
■■■■■■■■■■■

■■■
■■■■■■■■■■■

■ WEEK 3: Data Science Toolkit ■

■ - NumPy for numerical computing ■

■ - Pandas for data manipulation ■

■ - Data visualization with Matplotlib/Seaborn ■

■ - Exploratory Data Analysis (EDA) ■

■ ■■ Lab: EDA on Real-World Dataset ■

■■■
■■■■■■■■■■■

■■■
■■■■■■■■■■■

■ WEEK 4: APIs & Backend Development ■

■ - Building REST APIs with FastAPI ■

■ - HTTP requests and authentication ■

■ - Pydantic for data validation ■

■ - Serving model predictions via API ■

■ ■■ Lab: Build a Simple API ■

■■■
■■■■■■■■■■■

■■■
■■■■■■■■■■■

■ WEEK 5: AI & Deep Learning Fundamentals ■

■ - Machine Learning concepts ■

■ - Neural Networks with PyTorch/TensorFlow ■

■ - Training, evaluation, and optimization ■

■ - Transfer learning and pre-trained models ■

■ ■■ Lab: MNIST Digit Classification ■

■■■

■■■

■ WEEK 6: Capstone Project ■

■ - Build an AI-powered Customer Support Agent ■

■ - Integrate SQL database, LLM, and FastAPI ■

■ - Project presentation and documentation ■

■ ■■ Final Project Submission ■

■■■

■■■

5. PREREQUISITES

To get the most out of this course, you should have:

■ Basic understanding of programming concepts
(variables, loops, conditionals in any language)

■ A computer with:
- 8GB+ RAM recommended
- 20GB free disk space
- Internet connection

■ Willingness to learn and practice daily
(5-10 hours per week recommended)

No prior experience with Python, SQL, or AI is required – we will cover everything from the ground up!

■■■

6. TOOLS & SOFTWARE TO INSTALL

Please install the following software before Week 1:

■ Python 3.9 or higher
Download: https://www.python.org/downloads/

■ VS Code (Recommended Code Editor)
Download: https://code.visualstudio.com/

■ Git & GitHub Desktop
Download: https://git-scm.com/downloads

■ Jupyter Notebook (comes with Anaconda or install via pip)
pip install jupyter

■ Database Tools:
- SQLite (comes with Python)
- PostgreSQL (optional, for advanced use)

■ Create a GitHub Account:
https://github.com/join

We will set up everything together during Week 1, so don't worry
if you haven't installed these yet – we will guide you step by step!

■■

7. HOW THIS COURSE WORKS

Each week follows a consistent learning rhythm:

■ WATCH
Video tutorials covering key concepts.

■ READ
PDF lecture notes and reference materials.

✍■ PRACTICE
Hands-on labs and coding exercises.

■ QUIZ
Weekly quiz to test your understanding.

■ ASK
Questions and discussions with instructors.

■■ BUILD
Work toward the final capstone project.

Weeks 1-5 build foundational and intermediate skills.
Week 6 is dedicated to the integrated capstone project.

All lessons are self-paced within the week, but we encourage you
to follow the schedule to stay on track!

---

8. GRADING & CERTIFICATION

To successfully complete the course and receive your certificate from Dalloltech, you must:

■ Complete ALL weekly labs and submit your work

■ Pass all chapter quizzes (70% minimum)

■ Complete and submit the Capstone Project

■ Pass the Final Exam (70% minimum)

Your final grade will be calculated as follows:

Component	Weight
Weekly Labs & Assignments	30%
Weekly Quizzes (6 total)	20%
Capstone Project	30%
Final Exam	20%

Successful completion earns you a Dalloltech Certificate of Completion recognized by industry partners.

---

9. WEEK 1: WHAT TO EXPECT

This week, we will start from the very beginning:

■ DAY 1: Course Orientation & Environment Setup
- Install Python, VS Code, Git
- Create GitHub account
- Introduction to the course platform

■ DAY 2: Python Basics
- Variables, data types, operators

- Basic input/output

■ DAY 3: Control Flow
- if/elif/else statements
- for and while loops

■ DAY 4: Functions & Modules
- Defining functions
- Arguments and return values
- Importing modules

■ DAY 5: Mini Project - Number Guessing Game
- Apply everything learned this week
- Submit your first lab

■ DAY 6: Review & Week 1 Quiz
- Review key concepts
- Complete the quiz

---

10. ACTION STEPS FOR WEEK 1

Before next session, please complete these steps:

■ Step 1: Install Python 3.9+ on your computer

■ Step 2: Install VS Code and required Python extensions

■ Step 3: Install Git and create a GitHub account

■ Step 4: Watch the Week 1 video tutorials

■ Step 5: Read the Week 1 lecture notes (provided)

■ Step 6: Complete the Number Guessing Game lab

■ Step 7: Take the Week 1 quiz

■ Step 8: Join the course discussion/group channel

■ GETTING HELP

■ Course Discussion: [Add your platform link]
■ Instructor Email: [Add instructor email]
■ Office Hours: [Add office hours]

■■■

■ QUICK REMINDER

The skills you will learn in this course are exactly what technology companies are looking for today. Python + AI + APIs is one of the most powerful and in-demand combinations in the industry.

Stay curious, practice daily, and don't hesitate to ask questions – we're here to help you succeed!

Let's get started!

■■■

DALLOLLTECH COMPANY
Summer Training Program 2026

Python for AI &
Production Systems

■■■