

Virtual Environment Setup Guide (Windows + VS Code)

This guide explains how to create and use a local virtual environment for this project. It keeps dependencies isolated so everyone has the same setup, and it prevents version conflicts.

Step 1 – Install Python

1. Download Python 3.12 from <https://www.python.org/downloads/>.
2. When installing:
 - Check 'Add Python to PATH'
 - Choose 'Customize installation → Install for all users'

Step 2 – Create a virtual environment

1. Open PowerShell in your project root folder (where src/ is).
2. Run: `python -m venv .venv`

Step 3 – Allow activation (PowerShell security)

Run this once per session: `Set-ExecutionPolicy -Scope Process -ExecutionPolicy Bypass`

Step 4 – Activate the environment

Run: `& .\venv\Scripts\Activate.ps1`

You'll know it worked if your prompt shows `(.venv)`

Step 5 – Install project dependencies

Install packages: `pip install numpy matplotlib pytest`

Or install from requirements.txt: `pip install -r requirements.txt`

Step 6 – Use the venv in VS Code

1. Open the project in VS Code.
2. Click the Python interpreter name in the bottom-right corner.
3. Choose `.venv\Scripts\python.exe` (or browse to it if not listed).

Step 7 – Save dependencies

Run: `pip freeze > requirements.txt`

Share this file so others can recreate your setup with `pip install -r requirements.txt`

Step 8 – Deactivate when done

Run: deactivate

To reactivate next time: & .\venv\Scripts\Activate.ps1

Quick Reference

Create: python -m venv .venv

Activate: & .\venv\Scripts\Activate.ps1

Install: pip install -r requirements.txt

Save: pip freeze > requirements.txt

Deactivate: deactivate