



Getting started with Python

This is a curated list of some of the best resources to help complete beginners as well as experienced users of other programming systems to quickly start working in Python.

All of the essentials of navigating the Python ecosystem for structural dynamics engineers will be covered in the OpenSD Summer School courses. *None of the materials suggested here are mandatory, but will help especially newcomers to Python get the most of the upcoming OpenSD course.*

As people's backgrounds and areas of interest are different, this list is divided into three sections, covering the following interest groups:

- Newcomers to Python and programming beginners,
- People interested in using Python for numerical computations (including those with a MATLAB background),
- People interested in the Open-source community and development.

Python for beginners

Jupyter Notebook - an interactive Python programming environment

There are multiple ways to run Python, but perhaps the most popular with the scientific community is the [Jupyter Notebook](#) environment, that we will be using as the basis of our Summer School courses.

You can run Jupyter Notebook in its own web browser interface, or integrated into the excellent [Visual Studio Code](#) code editor, which is a very popular choice among Python developers.

If you are interested in the basics of Jupyter Notebook and Visual Studio Code, check out [this short introduction](#).

Get started quickly

If you want to skip setting up Python on your system for now and just start writing some Python code, take a look at [this interactive introduction to Python](#).

If you want to go through the basics as quickly as possible and move on to accomplishing useful tasks with Python quickly, look at the amazing (and free) [Automate the Boring Stuff with Python](#) online book by Al Sweigart.

Get more involved

[The official Python Tutorial](#) is perhaps the best resource to learn about all the features of the Python programming language and its standard library.

Python for numerical computing

Get started quickly

[NumPy](#) is the standard Python numerical library, bringing the basics numerical data types and operators. To quickly get started with NumPy, see the [official Quickstart guide](#).

NumPy for MATLAB users

NumPy brings a lot of functionality, familiar to MATLAB users, to the general-purpose Python programming language. If you are an experienced MATLAB programmer, you can begin with this [NumPy for MATLAB users reference](#).

Get more involved

NumPy is part of the broader [SciPy](#) open-source scientific framework for Python. To learn more about the numerical and scientific computing tools, readily available to you in SciPy, take a look at the [official SciPy User Guide](#).

Another resource for Engineers getting started with Python is the [Python Programming And Numerical Methods: A Guide For Engineers And Scientists](#) book by Kong, Siau and Bayen.

Open-source development tools

Get started quickly

At the core of the open-source contributing workflow are version control systems, of which [Git](#) is the most popular. If you want to quickly get familiar with basic Git workflows, look at [this short introduction](#).

Get more involved

To get an in-depth understanding of Git, along with its most advanced features, [The Atlassian Git tutorials](#) are possibly the best resource.

To get a feel for a practical open-source contribution workflow, check out the [Contributing to NumPy developer guide](#).