Welcome to COMPFOR 131 (BIO 131/BIOPHYS 131/535) W2025

Intro to python programming for the sciences

While you are waiting you can go to canvas, take the 1st day survey and give yourself points for showing up.

These slides are also available on canvas

Goals of this course

- To help you get comfortable using computers to address the scientific problems.

- To cover enough basics to give you the ability/confidence to use python in new ways, or to use other programs/languages as you need to.

- This class might not be a good fit if you already know how to program.

Rough outline

Today: We take apart computers! (no python)

Before spring break: Learn python basics by listening to short lectures, doing exercises in class and at home.

After spring break: work on larger “mini-projects” that are science forward and incorporate multiple programming concepts.

Last few classes: work on individualized projects or another mini-project.

Class format:

There are so many great resources available to learn intro programming in python. The reason to take this class (rather than learning on your own) is to have structure and support.

- Lectures will usually be short (≤30min), where we will introduce concepts for the days work. There will be notes posted. Sometimes they will not be complete and you will need to fill in gaps yourself.

- Most of the class will be spent coding. Most of you will be able to make decent progress on exercises during the class period, but you will likely have to finish them as homework.

- Most days, at least some coding exercises will extend somewhat beyond the notes, so you might need to fiddle or use other resources to complete assignments.

- If you miss class, you can make it up by engaging with the material. Notes will be posted. Lectures will be offered over zoom and posted on canvas most days.

Jupyter

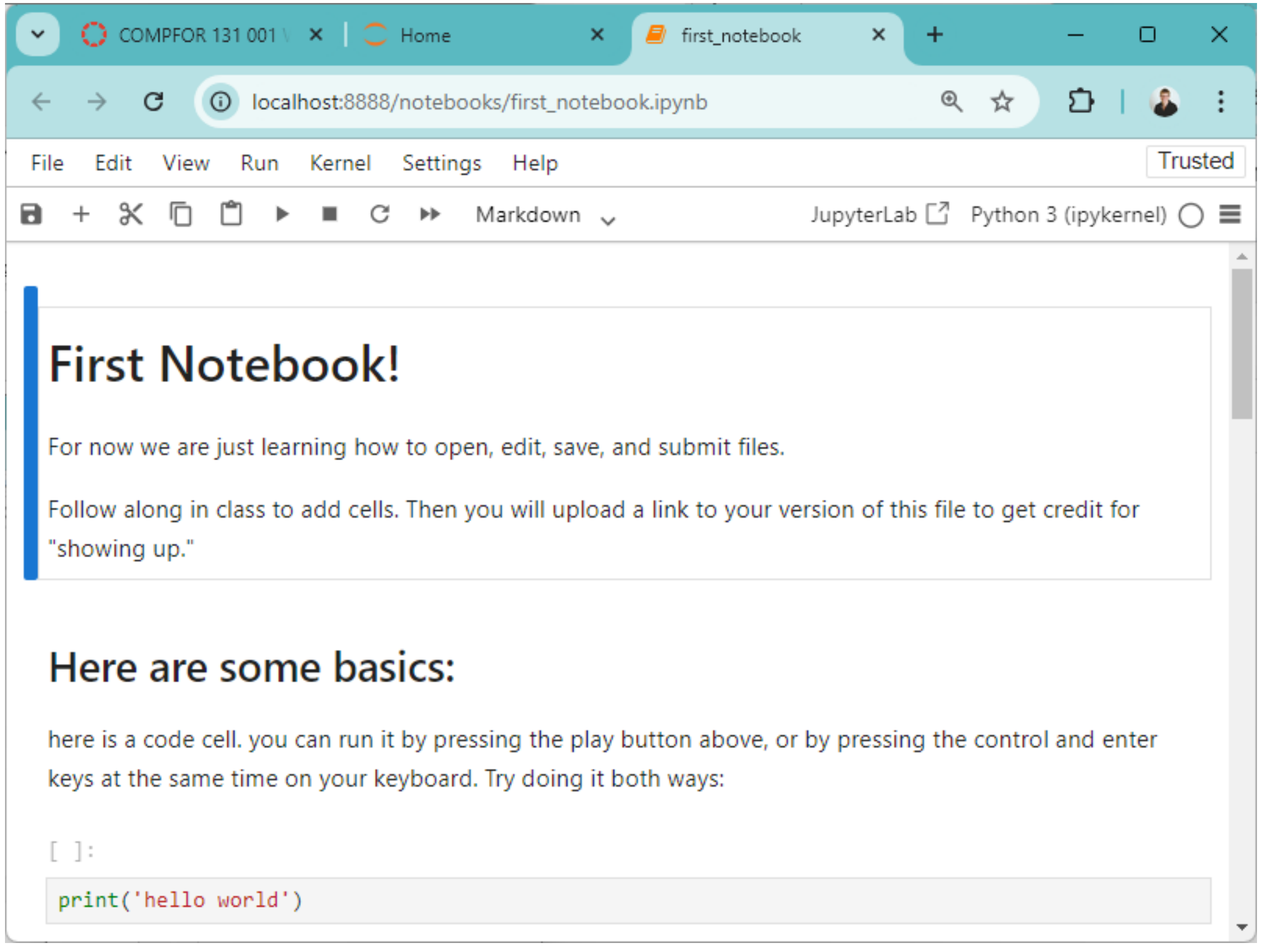
Jupyter is an add-on to python (one of many!) that lets you organize python code snippets alongside text in “notebooks”

Notebooks are nice for teaching/learning because they intermix formatted text and small sections of code.

They open inside of web browsers, even when viewing files on your computer.

This file is posted on canvas and you will edit it later in class.

Jupyter notebooks interact with the python interpreter but are not .py files. They are .ipynb files. If you try to open them in IDLE they will have extra characters.



First Notebook!

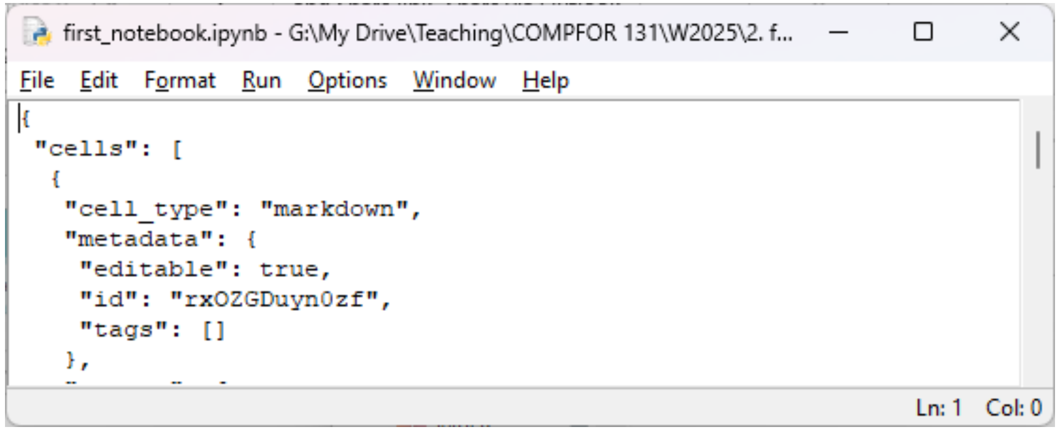
For now we are just learning how to open, edit, save, and submit files.

Follow along in class to add cells. Then you will upload a link to your version of this file to get credit for "showing up."

Here are some basics:

here is a code cell. you can run it by pressing the play button above, or by pressing the control and enter keys at the same time on your keyboard. Try doing it both ways:

```
[ ]:
print('hello world')
```


first_notebook.ipynb - G:\My Drive\Teaching\COMPFOR 131\W2025\2. f...
File
Edit
Format
Run
Options
Window
Help
Ln: 1
Col: 0

```
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  {
   "cell_type": "markdown",
   "metadata": {
    "editable": true,
    "id": "rxOZGDuyn0zf",
    "tags": []
   },
```

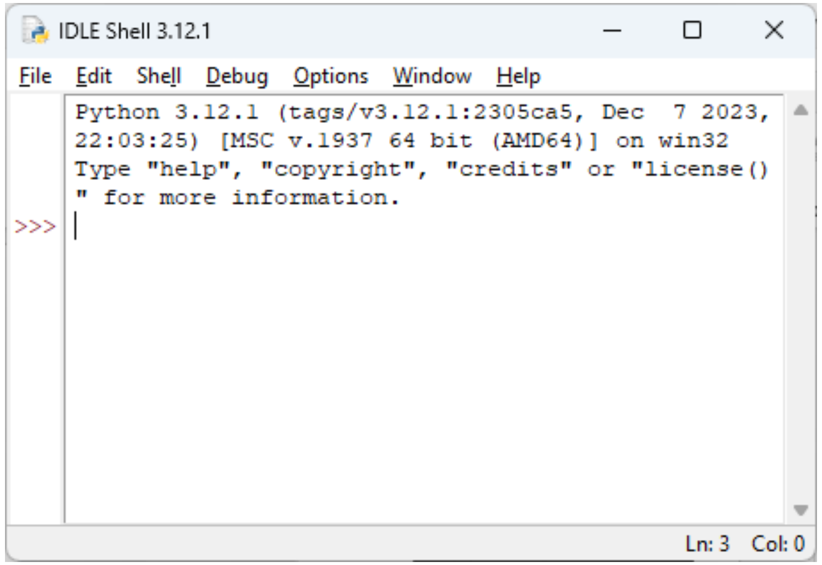
IDLE

IDLE is a simple IDE installed with the standard distribution of python

On Windows 11, you can open IDLE by searching for `idle` in the search bar or in a command window.

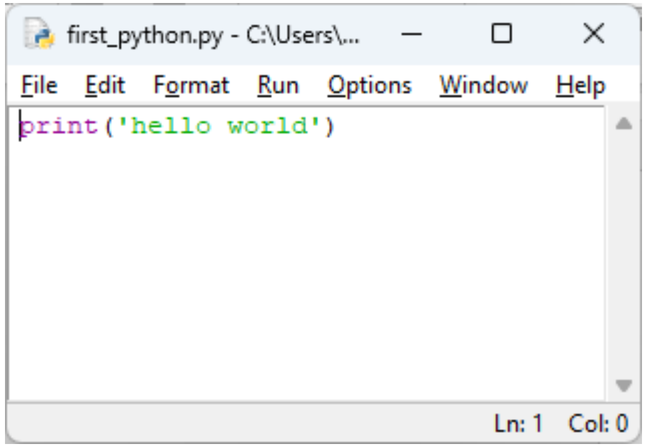
On Mac, you can open IDLE by searching for `idle3` in the spotlight search or in a command window.

When you first open it, it opens a shell where you can run commands.



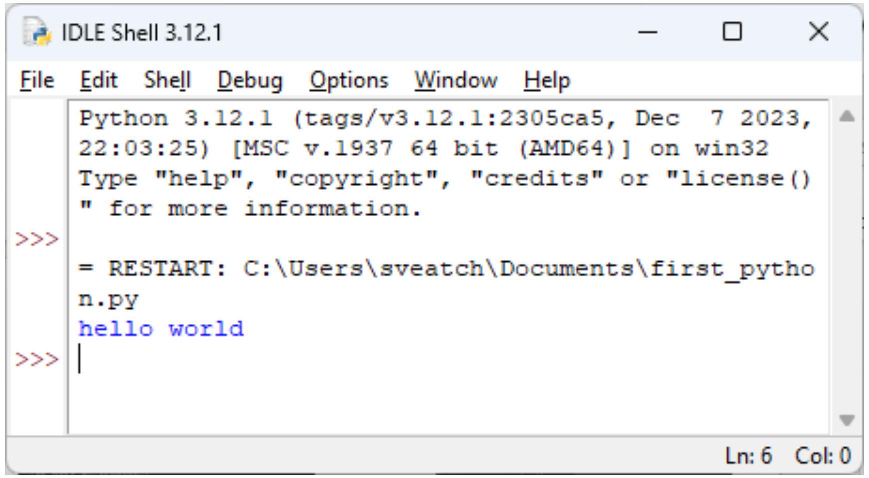
```
Python 3.12.1 (tags/v3.12.1:2305ca5, Dec  7 2023,
22:03:25) [MSC v.1937 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()
" for more information.
>>> |
```

It also includes and editor where you can create and edit python .py files with some useful python-specific features:


first_python.py - C:\Users\...
File Edit Format Run Options Window Help
Ln: 1 Col: 0

```
print('hello world')
```

One nice feature is that you can run the file through the interpreter (under Run) and outputs can be seen in the shell:



```
Python 3.12.1 (tags/v3.12.1:2305ca5, Dec  7 2023,
22:03:25) [MSC v.1937 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()
" for more information.
>>>
= RESTART: C:\Users\sveatch\Documents\first_pytho
n.py
hello world
>>> |
```

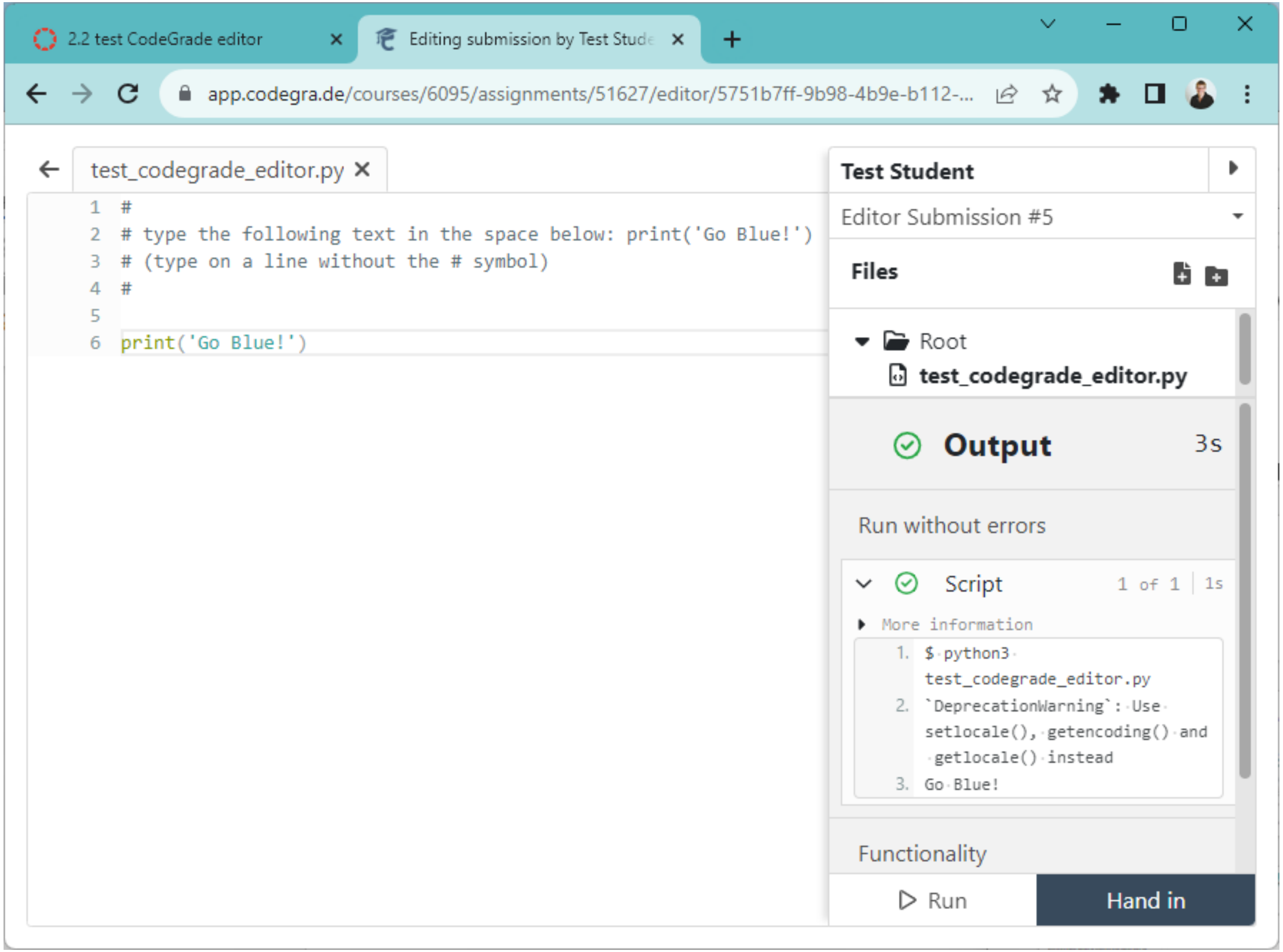
CodeGrade

CodeGrade is a tool we will be using to submit and grade coding exercises and mini-projects via canvas.

There are a few ways to use it, but one involves using an editor within codegrade itself.

You can run and/or hand in your code by pressing buttons in this interface.

We will practice using CodeGrade today.



```
#
# type the following text in the space below: print('Go Blue!')
# (type on a line without the # symbol)
#

print('Go Blue!')
```

```
1. $ python3 test_codegrade_editor.py
2. `DeprecationWarning`: Use setlocale(), getencoding() and getlocale() instead
3. Go Blue!
```