

DATSCI 151: Introduction to Statistical Computing II

Dr. Peter Sentz

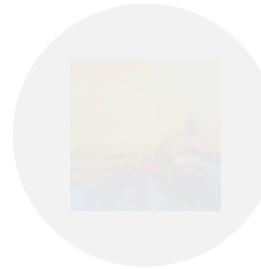
Agenda



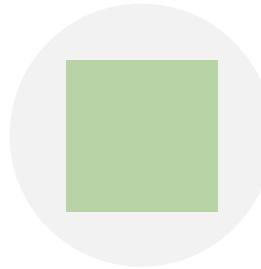
INTRODUCTIONS



CLASS DETAILS



COMPUTING
ENVIRONMENT



INSTALLATION



About me

- My name is Peter Sentz
 - Calling me “Peter” is fine
 - If you’re too scared to do that, “Prof. Sentz” or “Dr. Sentz” works as well.
- Academic Background
 - Studied Mathematics (minoring in Economics) at University of Wisconsin-Milwaukee
 - Master’s degree in Applied Mathematics at University of Washington
 - PhD in Computer Science at University of Illinois Urbana-Champaign
 - Postdoc in Applied Mathematics at Brown University.
 - This is my first semester at Emory University
- Pictured: my (now 6.5 month old) daughter
- My research background is in the numerical solution of differential equations and scientific machine learning.

Teaching Assistants

- Anika Chandra
- Ishaan Jain
- Vicky Wang
- Angie Siaca Sanchez

They will be answering questions during some lectures and holding office hours (see Canvas for office hours information).

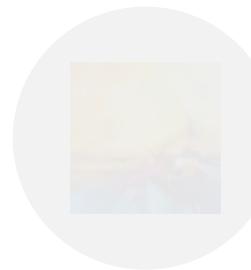
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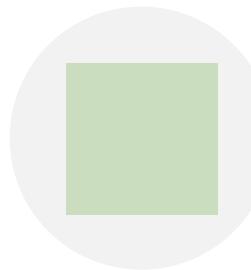
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Learning Objectives

- Learn how to code effectively in Python
- Learn about key programming principles
- Learn how to manipulate and visualize data

For more details and class schedule, review syllabus on course Canvas page!

Grades

- **Assignments (x 10): 50%**
- **Quizzes (x5): 30%**
- **Final Project: 20 %**
 - Will provide details mid-semester
 - Due at the end of the semester (April 27)
 - Groups of 3-4 students
- **Midsemester Survey: + 0.5% (Extra)**
- **Final Course Evaluations: + 0.5% (Extra)**

Late submissions

- Late assignments will automatically be graded for half-credit
- To account for unforeseen circumstances, we will drop the worst assignment and the worst quiz
- Watch out for the assignments to install software. You will need these to be able to use the lectures notes.

Coding ability is not innate

- Coding ability can be developed.
- Academic skills and abilities are acquired through hard work, **mistakes**, and perseverance.
- My only goal here is that you learn the material. Please ask me questions!

Questions about the logistics

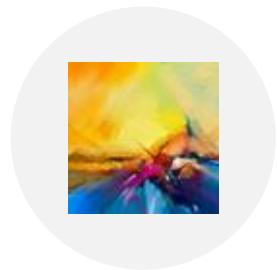
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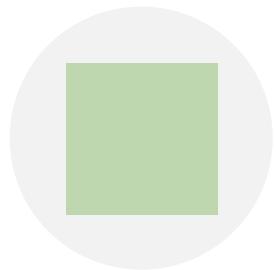
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Two components:



VS Code
Integrated
Development
Environment (IDE)

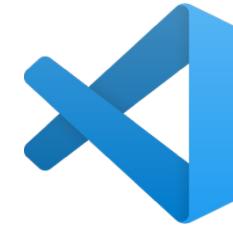
+



The “front-end” software that
you open every time you code
something in Python

A “back-end” software that
you install once and hardly
open again.

We open script files in VSCode



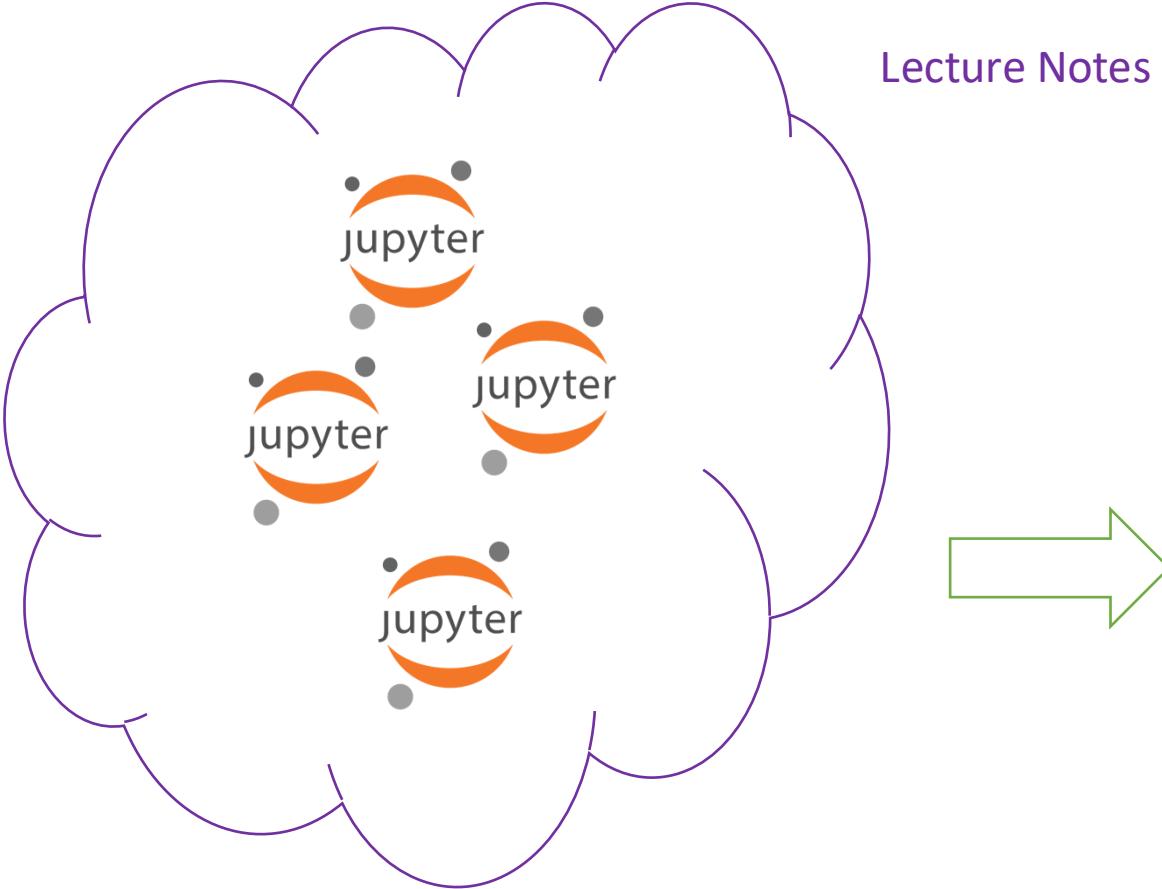
VS Code
Integrated
Development
Environment (IDE)

Environment where the user
writes the scripts

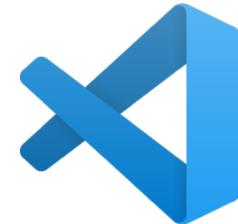
Script* File

- File with code in the **Python programming language**.
- Instructions for the program to follow

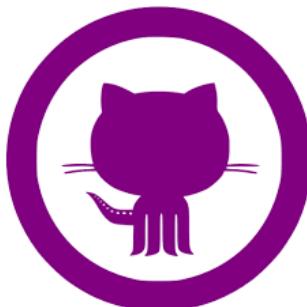
* Not really script files. Jupyter Notebook files



Lecture Notes



VS Code



Github:

A file management system in
the cloud (with desktop app)

- Has version control
- Great for collaborative
programming

Lecture notes are publicly available at my GitHub website (link posted on Canvas):

<https://github.com/sentz2/datasci151spring2026>



A screenshot of a GitHub repository page. The repository name is `qtm151_fall_2023`. The main branch is `main`, there is 1 branch, and 0 tags. The repository has 15 commits from user `jjestra`. Recent commits include updating `README.md`, adding files to the `computing_setup` folder, and deleting `lecture_01`. The repository has 0 stars, 0 watching, and 1 fork. It includes sections for `Readme`, `Activity`, `Releases` (no releases), and `Packages` (no packages). A note states: "No description, website, or topics provided."

You can view the lectures in the browser

A screenshot of a Jupyter Notebook cell. The code cell contains the following Python code:

```
In [ ]: print('Hello, World!')
```

The output of the cell is:

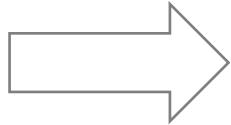
Hello World in Python using a Jupyter Notebook



A Jupyter Notebook (“.ipynb”) is a file with code (python) and annotations (markdown)

The screenshot shows a Jupyter Notebook interface. At the top, there's a header bar with a file icon, the filename "hello_world.ipynb", a close button, and a three-dot menu. Below the header, the path "qtm151 fall 2023 > lecture_00 > hello_world.ipynb" is displayed, along with buttons for "Code", "Markdown", "Run All", "Clear All Outputs", "Outline", and a three-dot menu. The main area contains a section titled "Hello World in Python using a Jupyter Notebook". A code cell displays the Python command "print('Hello, World!')". To the right of the code cell is a small Python kernel logo with the text "base (Python 3.11.4)".

- All the lecture notes are written as Jupyter notebooks
- It is encouraged that you bring your laptop to class
- Lecture notes are designed to be follow-along. There will be “try it yourself” exercises.

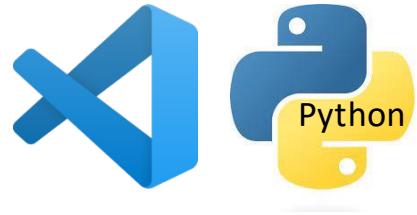


VS Code

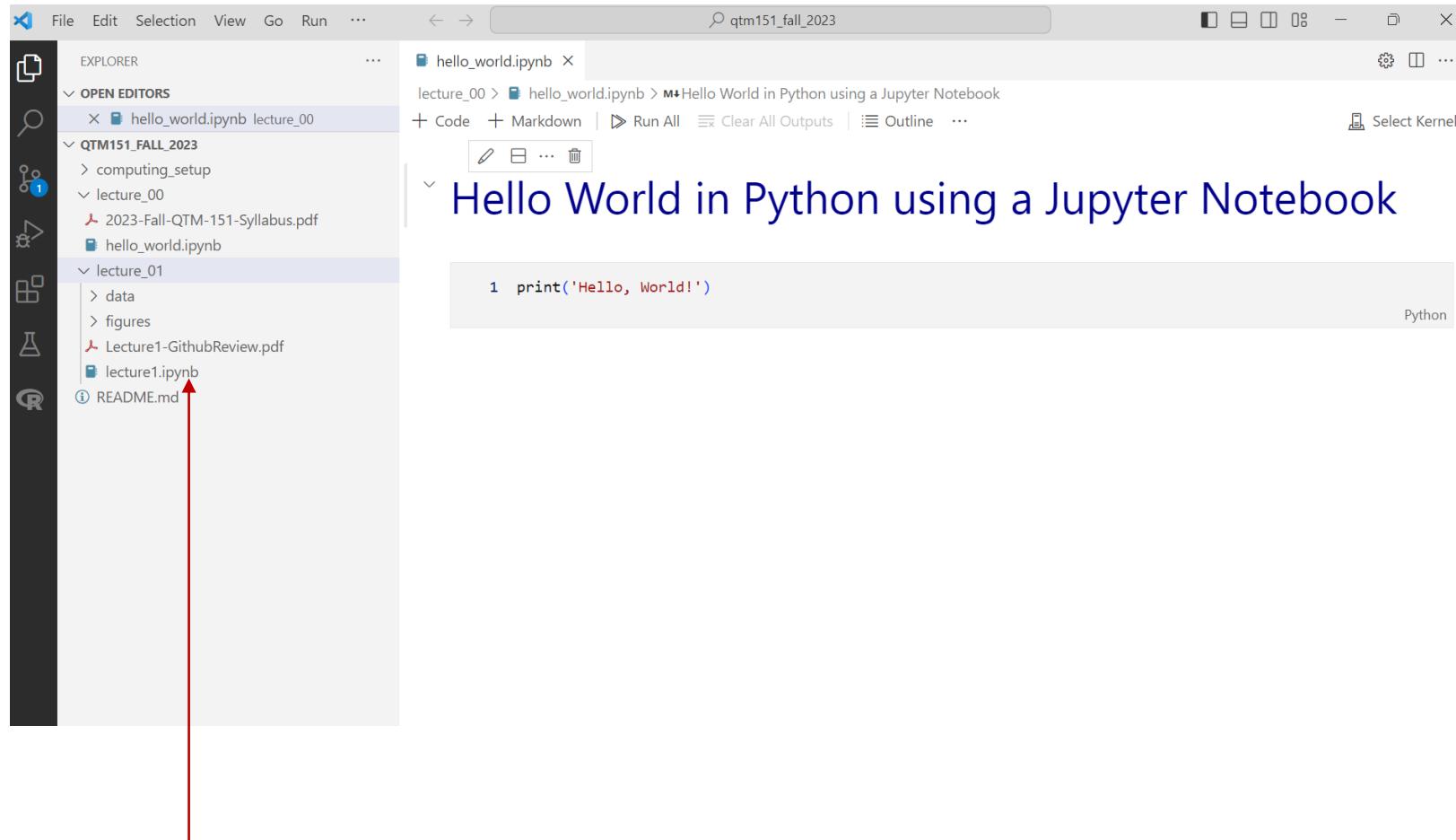
See Assignment 1

Basics of a Jupyter notebook

- Need to have all the tools installed
- Install soon that we can help you with any issues!



We will do all our coding in Visual Studio Code



Lecture notes

“.ipynb”: Interactive Python Notebook

Github Desktop will allow you to automatically download the lectures notes from my account (and update them).

It will also show you

- the date of any update
- what the changes are

Update the lecture notes before class!

Current Repository: qtm15spring2025

Current Branch: main

Last fetched 24 minutes ago

Changes: 20 History

No Branches to Compare

Upload first few lecture notes

Alejandro Sanchez-Becerra · 26 minutes ago

Update README.md

Alejandro Sanchez-Becerra · 42 minutes ago

Initial commit

Alejandro Sanchez-Becerra · 42 minutes ago

Update README.md

Alejandro Sanchez-Becerra · 42 minutes ago

1 changed file

README.md

		@@ -1
1	- # qtm1	1
2	+ # QTM	2
3	+ This c nts wi studen	3
4	+	4
5	+ ## Bas	5
6	+	6
7	+ Go to	7
8	+	8
9	+ - Inst	9
10	+ - Inst	10
11	+ - Gith	11

Questions about computing environment?

Agenda



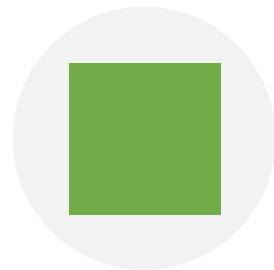
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Let's get started!

Go to “Modules” in Canvas and open the documents under “Installation” and follow instructions.

- I will stick around to help if you want to try installing everything today
- If you don't complete the installation, we will return to this next class