# Mobley Group Coding Tutorials

This directory has Google docs with instructions and links to tutorials for good coding practices.

This file includes links to potentially useful tutorials and resources. Please feel free to add resources to this document or contact the [person incharge of github/coding training](https://docs.google.com/document/d/1Eg8RrzOkVbDpDjGlE6ttzCz8QpbMo_QFfazVoXa1hhU/edit) (currently Caitlin) with any questions or recommendations.

A note on formatting, since Google doesn’t have an easy way to insert a coding font (such as `code text` in slack or markdown), those will be colored pink here instead, and tabbed in if it is a block of code at once, for example:

import numpy as np

a = np.array([1,2,3])

print(a\*\*2)

## Included in this Directory

* [Anaconda](https://docs.google.com/document/d/1v79U2AEQ2-NDZD9LBHNQsjQOSgHHeiycFYhJRfUhrU0/edit?usp=sharing) 
  + This file contains instructions on downloading anaconda, setting up environments, and a bit of explanation on why having separate python environments is good practice.
* [IDE](https://docs.google.com/document/d/1WFGGA0mV-jfTaHpOgGWJDWFns2GZxozjhaF1mDm06oE/edit?usp=sharing)
  + Integrated Development Environment (IDE) is the program where you actually do your coding. VIM, Atom, and PyCharm are favorites in our group, but ther are many others.
  + This file has a list of IDEs including some pros, cons, and who has experience with each.
* [Jupyter Notebooks](https://docs.google.com/document/d/1ypxBWF2Kfd2H5CBTI2SSet6x7m89W9Iu2qpWanTBFng/edit?usp=sharing)
  + Jupyter Notebooks are a web application that allow you to use python code live with substantial documentation.
  + These are very useful for testing new code and visualizing results. It is typically good practice to make some jupyter notebooks as examples of any python modules you create.
* [GitHub Tutorials](https://drive.google.com/drive/folders/1nyZ2rZIw2fpd-HgCxxpFy-ipZ1tZ0B55?usp=sharing)
  + This is a folder full of our GitHub tutorial, instructions, and recommendations. Included are introductions for new users and basic instructions for how to organize a repository. Every project is a little different, but we also have recommendations for how to use issues, pull requests, and other GitHub features.
* [MarkDown](https://docs.google.com/document/d/1lcgR7TldQzPK61yOHV8V9ruzbEpbLBUdLklC7ess98w/edit?usp=sharing)
  + MarkDown (files ending in .md) is an enhanced text format that is used in Github and Jupyter notebooks.
  + This file includes some basic instructions and links to helpful MD cheatsheets.
* [Write\_pythonic\_code\_like\_a\_seasoned\_developer](https://drive.google.com/file/d/1yMqR6xXgWHg2lK-IWwMXR7zFFNSrrqmL/view?usp=sharing)
  + This is a Jupyter notebook Caitlin Bannan made while taking the [Talk Python](https://training.talkpython.fm/courses/explore_pythonic_code/write-pythonic-code-like-a-seasoned-developer) tutorial with the same name
* [Python Data Structure Look Up](https://docs.google.com/spreadsheets/d/11lP_mdGth9t1I4HOeNzeSj1jz5e8FTzBbHIUFN5F0Qw/edit?usp=sharing)
  + This is essentially just a big table with different python modules that we find helpful. This inlcudes a brief description of what it is used for and a links to tutorials and/or documentation pages

## Python Tutorials Outside This Directory

* [Real Python](https://realpython.com/start-here/)
  + This is a blog I recently discovered that has great examples and explanations of just about everything you want to know about python, great place to look if you want to understand something better.
  + They also have some courses behind a pay wall that I can’t speak to
* [Codecademy](https://www.codecademy.com/)
  + Code Academy provides low level introductory courses for a variety of languages, if you have no coding experience this is a good starting point.
* [Talk Python](https://training.talkpython.fm/policies/pricing)
  + These are paid tutorials, but provide indepth introductions to more complex coding concepts including pythonic styling and documentation.
* [San Diego Python](http://www.pythonsd.org/pages/getting-started.html)
  + This is a group of Python developers in San Diego who maintain a list of recommended tutorials, videos, and online classes for new Python users. If you think any of them are particularly useful please add them to this list

## Coding Style Resources

Coding style is important in python (and all languages). Following the style expected by other developers makes your code easier to read, understand, and use. Many of the the python tutorials listed above also include instructions on Style, but here are some other resources which more specifically address it:

## GitHub Resources

We’ve included here a series of tutorial/instruction files for GitHub. However, GitHub is a popular resource used by many groups, developers, and companies so there are a lot of online resources as well. See [Getting Started](https://docs.google.com/document/d/15GPXIdxUpaz693vgKeKaM5yQb0q7dBS61tUg4E3mBUc/edit?usp=sharing) in the GitHub Tutorials folder for more online resources, also when in doubt google for what you want to do there is probably a Git command for it.

## Tutorials for Other Tools and Languages

Our group primarily works in Python, but if you’re looks for other resources hopefully we have a place to start

### C++

* [C++ programming for Quantum Chemistry Tutorial](http://sirius.chem.vt.edu/wiki/doku.php?id=crawdad:programming)
  + This one came from Daniel Crawford’s group at Virginia Tech, they are primarily a QM group, but this tutorial includes a decent fundamentals introduction to the language. Also, working on science projects are likely more interesting than just learning how to print “Hello World”
* More General C++ tutorials, not specific to scientific computing
  + <http://www.learncpp.com/>
  + <http://www.learn-cpp.org/>

### Docker

* [What is Docker and How to Use it With Python (Tutorial)](https://dev.to/djangostars/what-is-docker-and-how-to-use-it-with-python-tutorial-87a)
  + [CCB] I haven’t actually read this yet, I’ve been wanting to learn about Docker and this looks like an easy to follow tutorial.