# pythonic-science

*Release 0.1*

**Mar 17, 2020**

# Contents:

## CH410/510 Scientific Computing

- The class will meet Mon and Wed at 9 am 1 hr, and then Fri for 2 hr.

- In general, Mon and Wed will be instruction days where we cover new programming material. Fri will be an open "lab" where you will work on exercises in class.

## People

- Mike Harms OH: 12 pm Thursdays, Will 342)
- Joseph Harman OH: 1 pm Wednesdays, Will 342)

---

# Conceptual Goals

---

By the end of the course, students should understand:

- Basic python: data types, key words, control, functions and imports

- Core python extensions for scientists: scipy, numpy, and jupyter

- Strategies for dissecting problems and formulating solutions in code

- Where to go to pick up skills in the future as the need arises

# Skill Goals

By the end of the course, students should be able to:

- Write basic python programs from scratch

- Identify existing libraries for a problem and learn how to use them

- Generate arbitrarily complex custom plots

- Simulate experimental sampling

- Manipulate scientific datasets of the following types (at a basic level):

- High-throughput sequencing data

- Chemical structure data from databases such as the PDB

- Images

Course schedule

# Assignments

- Project prospectus (Due May 10)
- Final project (Due June 10)

## 5.1 Weekly assignments

- There will be 8 labs.
- We will (generally) start the labs on Fri in class.
- They will be due the following Wed in class.
- They can be turned in by email.

# Grading

- **Breakdown:**
    - 25% attendance
    - 25% final project
    - 50% labs (6.25%/lab)
- Labs will be graded based on whether they are turned in, whether we can run the notebook, and whether they notebooks give the right results.
- The final project will be graded according to the rubric given in the Final project description.

Resources

- Cool Python cheat sheet.
- Python cheat sheet
- main github repo.

# CHAPTER 8

# Indices and tables

- genindex
- modindex
- search