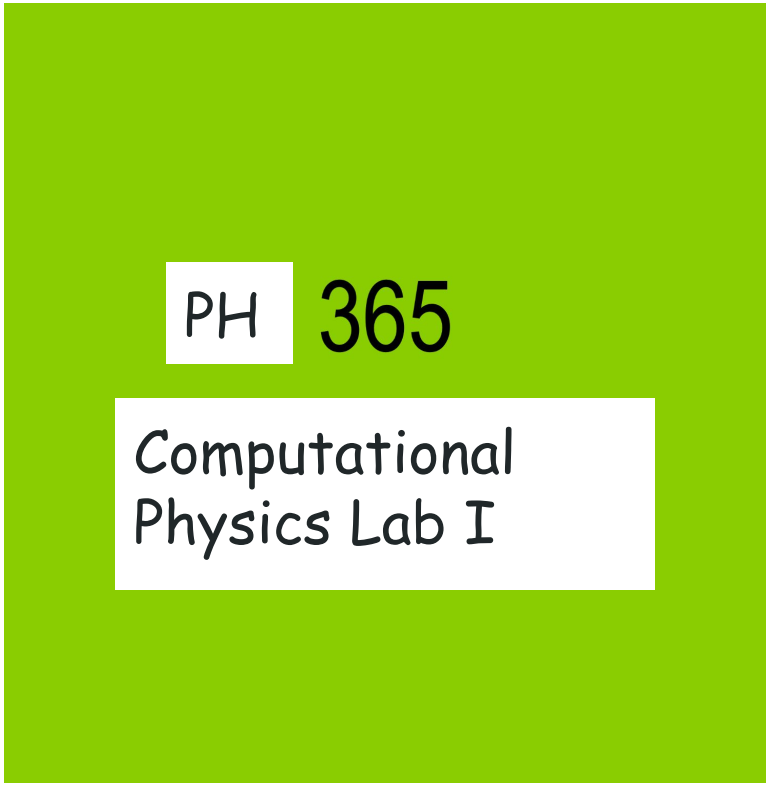
Welcome to PH 365

25 Sep 2024

Summer

Fall



About Your Instructors

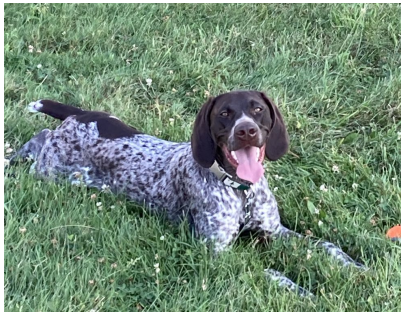
Prof. Patti Hamerski

Physics education researcher

Research topics:

- Intersections of computational physics education, generative AI, and creativity
- Transgender STEM graduate student experiences
- Improving transfer pathways in the physics department **(*openings for undergrad students)**

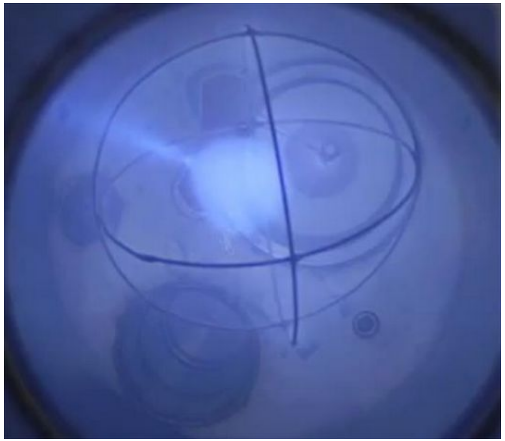
Moved to Oregon to join OSU last year, love to explore the surrounding area with my dog, Pamela



About Your Instructors

Vincent Vaughn-Uding (LA)

- 5th year Physics/Mechanical Engineering major (worst mistake of my life)
- Unhealthy obsession with computational physics
- Currently performing computational modeling of IEC reactor in NSE department



About Your Instructors

Mateo Hall (LA)

- 4th year Physics Major. Studied CS in community college
- Interested in Astrophysics/Astronomy
- I love traveling, playing the Piano, and video games. I have a few cats back home.
- My current research project is analyzing NO_2 and HCHO columns around Oregon forest fires.

Some highlights from the syllabus...

Class Meeting and Office Hours

Mon/Wed in **Weniger 328** at **2:00-3:20pm**

Office hours Fridays 2-3pm, in my office (Weniger 485) or on Zoom

Course Description

Project-driven lab experience in computational physics

No prior computing experience needed

Learning goals:

1. Develop proficiency using basic Python programming tools and implementing them in code
2. Connect basic programming tools to physics practices, and build strategies for doing physics with code and interpreting code outputs in terms of the relevant physics
3. Use programming libraries like NumPy and Matplotlib to add simplicity and efficiency to code and create models of physical phenomena
4. Communally construct best practices for writing code, sharing it with peers, and using external resources to help with coding

Topics Covered

- Working in Python notebooks
- Computing arithmetic
- Variables in programming
- Lists and indexing
- Loops
- Code library usage
- File management
- NumPy arrays
- Vectorization
- Plotting in Matplotlib
- Conditional statements
- Writing functions
- Variable scope
- Euler's method

Course Activities

In-class participation *(and that's it! no work outside of class)*

- Bring your laptop (if you have one; otherwise we have several classroom computers)
- Active learning classroom (working together to problem-solve)
- Designing, creating, altering, discussing solutions to problems
- Sharing ideas, challenges, and takeaways with the class

Our collective experience and what we all learn relies on you

Grading Details

All grading comes from in-class activities

- Participation and in-class assignments: **60%** (drop 2 lowest scores)
- Mini-project 1 (week 5): **20%**
- Mini-project 2 (week 10): **20%**

Grading Scale:

93 <= x: **A**
90 <= x < 93: **A-**
87 <= x < 90: **B+**
83 <= x < 87: **B**
80 <= x < 83: **B-**
77 <= x < 80: **C+**
73 <= x < 77: **C**
70 <= x < 73: **C-**
67 <= x < 70: **D+**
63 <= x < 67: **D**
60 <= x < 63: **D-**
x < 60: **F**

Inclusive Classroom Environment

“Where instructors and students work together to create and sustain an environment in which everyone feels safe, supported, and encouraged to express their views and concerns”

Inclusive Classroom Environment

Our collective experience and what we all learn relies on you and me

You are:

- a student
- a peer to your classmates
- a member of the campus community
- a person

I am:

- an instructor
- a member of the campus community
- a person

Rest of Syllabus...

...can be found on Canvas

Please read, and direct any questions to me

Any questions so far?

Icebreaker Activity

Get into groups of 3-5

Go around and share:

- Your preferred name and pronouns (optional)
- Something fun you did this summer
- Something boring you did this summer

Anaconda and Jupyter

Let’s install **Anaconda** together!

- We will use **Anaconda** to access **Jupyter**, which we can use to work on **Python notebook** files
- Open your laptops, or grab one from the laptop cart
- Head to Canvas for instructions

Doing Assignments (this is how you get graded)

1. On Canvas, download the day's assignment
2. Open it in Jupyter
3. Work on the assignment, freely collaborating with other students
   a. 🛑 means read carefully, sometimes there is an instructor checkpoint
   b. ✅ means work on a specific task
4. If there are instructor checkpoints (indicated by 🛑), make sure you check in before moving on
5. Often, we will end class with a group activity or discussion
6. At the end of class, save your work and submit your file on Canvas