

# Getting Involved in Undergraduate Research

# What is Research?

- **Research** is a process of investigating some topic with the intent of broadening or deepening the collective knowledge of that topic.
  - Unlike a math class (e.g.) there is no established “right” answer... yet!
- There are two types of research:
  - **Basic Research** – Research aimed at developing knowledge
  - **Applied Research** – Research aimed at solving a particular problem.

# Undergraduate Research

- University and college professors perform research as part of their jobs.
  - Professors often teach courses, perform research, and serve their college (advising, e.g.) and community (volunteering, e.g.)
- Undergraduates can get involved in research during their time at a college or university.
  - (And you'll develop some critical skills to prepare you for this during this course!)

# Benefits of Undergraduate Research

- Students who engage in undergraduate research
  - Perform better academically [\[1\]](#)
  - Are more likely to persist and graduate [\[2\]](#)
  - Receive invaluable one-on-one mentorship (and a letter writer!) [\[3\]](#)
  - Have increased confidence [\[4\]](#)
  - Have an increased expectation of completing graduate school [\[4\]](#)
  - Will develop strong critical thinking skills [\[5\]](#)
  - Develop in-demand skills including [\[5\]](#):
    - Data analysis
    - Lab techniques
    - Combining theory with practice
    - Etc.

# How to Get Involved

- **Communicate with professors.**

- Check the university profile of professors you might be interested in working with to better understand what they study.
- If their research is potentially interesting to you, email them, talk to them in office hours, or talk to them after class. Ask how you can get involved.
- Ask what kinds of coursework or skills you need to do research with them and what you would learn on the job.

- **Communicate with your advisor**

- Make sure your advisor knows you are interested in doing undergraduate research. They can help you find internal and external opportunities.
- They can also help you schedule appropriate coursework to prepare for research in your field of interest.

# How to Get Involved

- **Manage Expectations**

- Some professors may not have a project available for you to work on. Try not to take this as a personal rejection – sometimes you'll be unlucky and a professor will not have room for additional students, and other times you'll be lucky and find a project to work on.
- Undergraduate research projects are often a smaller piece of a larger research puzzle. You may work independently at times and with a team at other times.
- Undergraduate research projects are a tremendous opportunity to gain skills and deepen your knowledge of a topic. These are the most important dividends – don't expect to win a Nobel Prize (yet!).

# Research Skills Developed in This Course

- In this course, we will develop the following skills:
  - Problem solving
  - Sense making
  - Data analysis
  - Data collection
  - Study design
  - Python programming
  - Algorithm design
  - Autonomy
  - Critical thinking
  - Numeracy
  - Scientific literacy