

Welcome!

CMPSC 105 – Data Exploration

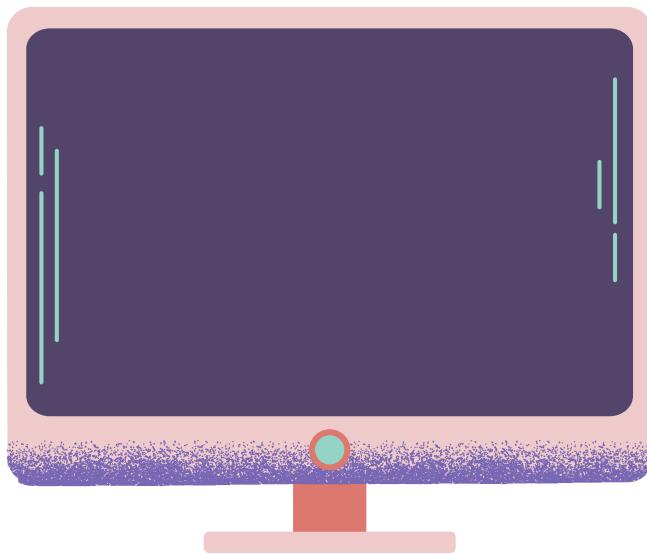


ALLEGHENY COLLEGE

Agenda for today

- Introductions: Getting to know me
- Course overview and expectations
- Class Survey: Getting to know you

The basics



Instructor: Hang Zhao

Office: Quigley Hall 208 & Alden Hall 105

Email: hzhao@allegheny.edu

Office hours:

T/Th 11:00am-12:30pm. Location: Alden Hall 105

W 10:00am-1:00pm. Location: Virtual

By appointment at <https://calendar.app.google/PD6Ku9PSCZ716K5D7>

A little about me



Visiting Assistant Professor

- Dep of Computer and Information Science
-

Education:

- **University of Connecticut**
- Doctor of Philosophy, Agricultural and Resource Economics
- **Boston University**
- Master of Science in Actuarial Science
- **University of Colorado**
- Bachelor of Arts, Major in Economics, Minor in Mathematics

Research Interests:

- Drug policies, the well-being of older adults, nutrition and health outcomes



LOADING...

Resume



You Have A
New Messages!

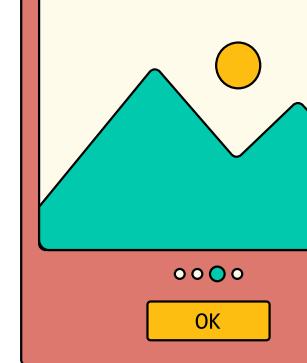
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READ



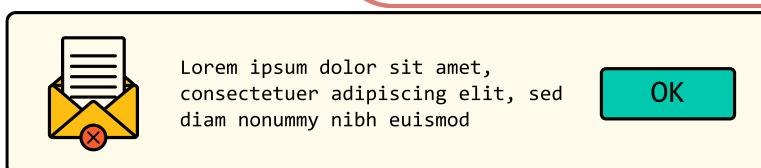
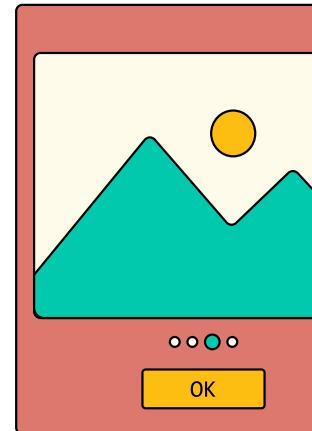
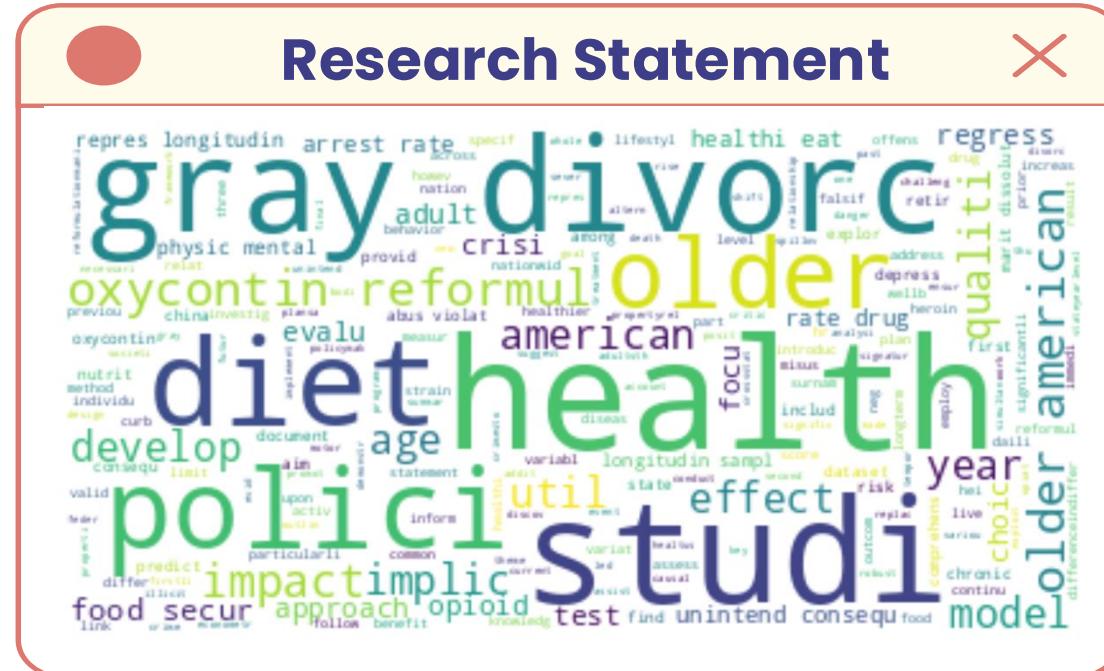
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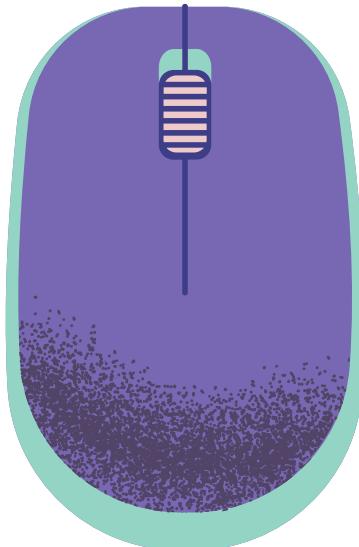
OK





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Course overview and expectations

What is this course about?

This course is for anyone interested in becoming familiar with:

- data display
- data gathering
- data analysis
- data storytelling

Learning Outcomes and Objectives

Objective 1: Identify and describe key elements in different types of data visualizations..

Objective 2: Visualize data on web-based platforms.

Objective 3: Develop hypotheses and find data to address hypotheses.

Objective 4: Calculate statistics and visualize key patterns in the data with Python.

Objective 5: Document data explorations in markdown.

Class Structure

- Lectures
- Activities
- Lab Assignments

classDocs/

- First stop for all materials
- Syllabus
 - Attendance
 - Tokens Policy
 - Using Artificial Intelligence
- Lecture slides

classDocs/ Continued

- GitHub for accessing and submitting assignments
- Google Colab or VScode for completing assignments
- Discord for announcements and participation
- Canvas for grades

Assessment

- Class Participation and Activities (30%)
- Lab Assignments (50%)
- Final Project (20%)

Course grades will approximately fall into the following ranges: A (93%), A- (90%), B+ (87%), B (83%), B- (80%), C+ (77%), C (73%), C- (70%), D+ (67%), D (63%), F(60%).

Other Syllabus Highlights

- Participation is a major part of participation (30% of overall grade)
- Participation includes:
 - Completing group work/activities
 - Quizzes on readings and other class materials
- Four tokens grant automatic extensions for one week
- After the first week, 2 absences will be excused before overall grade is impacted
 - three lates are equivalent to an absence

How to do well

- Attend lectures
- Come to office hours
- Study with your peers

Class Survey: Who are you?

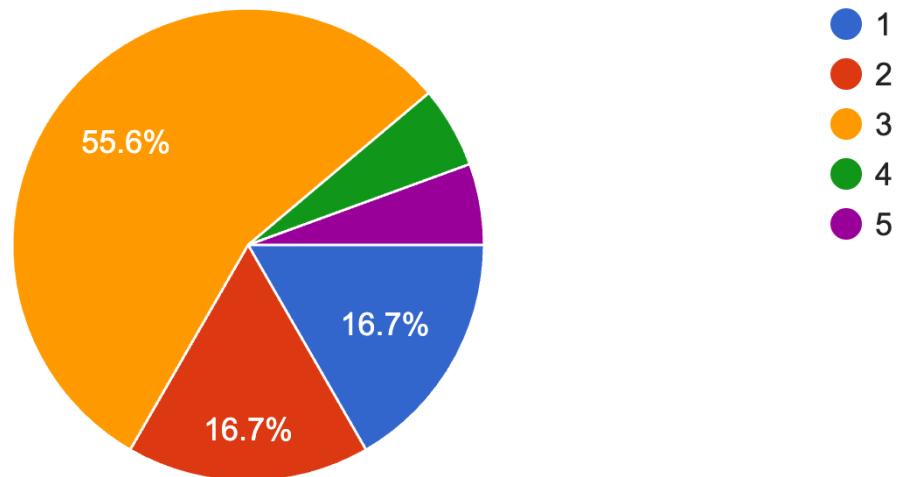
Class Survey

Name, where you are from, favorite sport, and some of your current favorite foods?

Class Survey: Who are you?

How comfortable are you in using Python programming languages? 1 = not comfortable, 5 = very comfortable

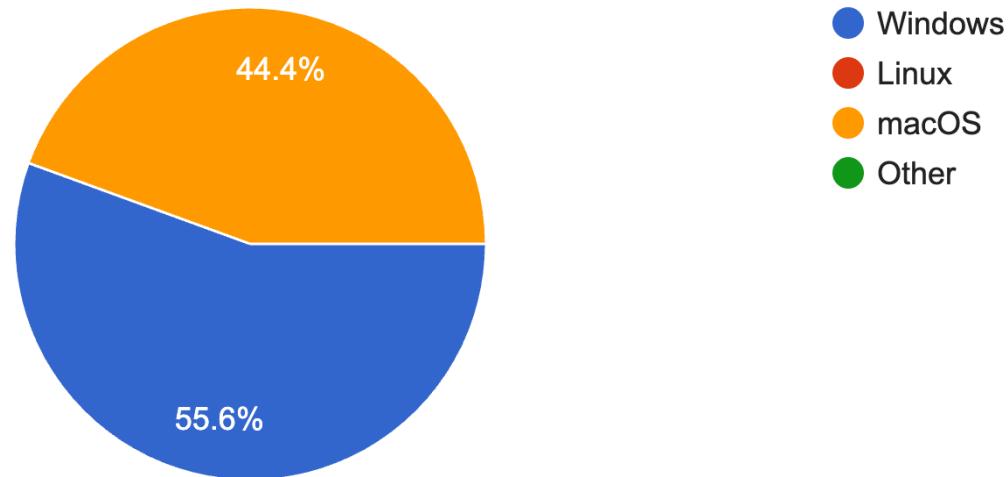
18 responses



Class Survey: Who are you?

What operating system do you primarily use?

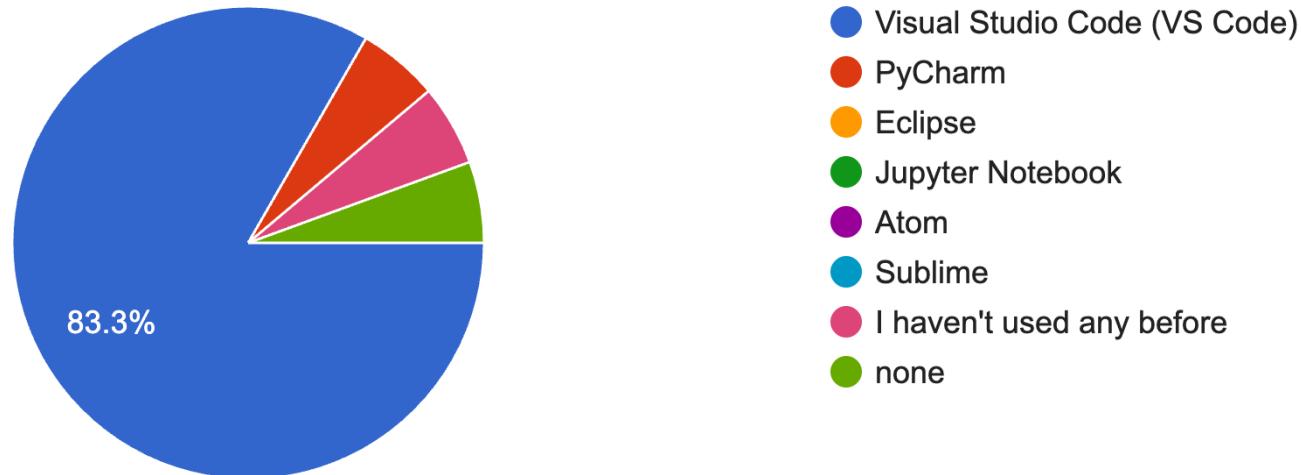
18 responses



Class Survey: Who are you?

What is your primary Integrated Development Environment (IDE) for programming?

18 responses



Setting Up

- bookmark the [website](#)
- bookmark the [105 Discord Channel](#)
- bookmark notes that you take in [Google Colab](#) or elsewhere
- bookmark [Canvas](#)
- etc.

Google Colab

What is Google Colab?

- A cloud-based Jupyter Notebook environment from Google.
- No installation required, you just need a web browser and a Google account

How to Get Started

- Go to **colab.research.google.com** in your browser.
- Sign in with your Google account.
- Click **File → New notebook** to create a new Python notebook.
- Run code cells by clicking the play icon or pressing *Shift + Enter*.
- Save and exit. The .ipynb file will be saved in Google Drive under My Drive → Colab Notebooks.

Google Colab

Activity 01

Visual Studio Code (VSCode)

A lightweight but powerful source code editor, a free code editor

- Cross-platform compatibility: available on Windows, macOS, and Linux.
- Extensive language support: JavaScript, Python, HTML, C++, C#, Java
- Rich extension ecosystem
- Integrated Git support: Directly manage your Git repositories within the editor.
- Debugging tools
- Built-in terminal

Setting up Visual Studio Code

- Download and install VS Code:
<https://code.visualstudio.com/download>
- Verify VSCode Installation:
- Execute `code --version` in Command Prompt (CMD)/Terminal to confirm your VSCode installation.

- > OUTLINE
- > TIMELINE
- > DOCKER CONTAINERS
- > DOCKER IMAGES
- > AZURE CONTAINER REGISTRY
- > DOCKER HUB
- > SUGGESTED DOCKER HUB IMAGES

Welcome

Visual Studio Code

Editing evolved

Start

- New File...
- Open File...
- Open Folder...
- Clone Git Repository...
- Connect to...

Recent

- cmpsc104_documentEngineering C:\Users\hangz\CIS
 - lab3 C:\Users\hangz\CIS\cmpsc104_documentEngineering
 - lab1 C:\Users\hangz\CIS\cmpsc104_documentEngineering
 - lab2 C:\Users\hangz\CIS\cmpsc104_documentEngineering
 - lab1_solution C:\Users\hangz\CIS\cmpsc104_documentEngineering
- More...

Walkthroughs

- Get Started with VS Code Updated
Customize your editor, learn the basics, and start coding
 - Learn the Fundamentals
 - Getting Started with EasyCode Updated
 - Get Started with Python Development Updated
 - Get Started with Jupyter Notebooks Updated
- More...

Setting Up Virtual Environment

- Create a project directory

```
mkdir projects  
cd projects
```

- Create virtual environment using Python

```
python3 -m venv myenv  
# see the file tree  
find . -not -path '*\.*'
```

- Activate myenv the virtual environment

```
source myenv/bin/activate # macOS/Linux  
myenv\Scripts\activate # Windows
```

- Install Dependencies

```
pip install matplotlib  
pip install numpy
```

Today's Lab

- Set up GitHub & Discord
- Practice Lab

THANKS