

Task 1: Plotting

- generate a plot of a sine wave vs. time:
 - create a time vector using `np.arange`
 - use `plt.figure` and `plt.plot` to create the graph
 - also use `plt.xlabel`, `plt.ylabel`, and `plt.title` to complete the plot

Task 2: loadtxt and for loops

- write Python code that finds all of the `*.csv` files in a folder, loads each `*.csv` file into an array, and then generates on plot per file
 - assume each `*.csv` file contains data in columns where the first column is time
 - plot the remaining columns vs. time on one plot
 - the data files may have different numbers of columns in them
- Here are links to three csv files:
 - data file 1
 - data file 2
 - data file 3
- download all three files to the same folder
- use `glob.glob` to find all of the `*.csv` files in a given folder
- use `np.loadtxt` to load the data from one `*.csv` file into an array
- use `plt.figure`, `plt.plot`, ... to generate the plots

Task 3: Writing a Function

- create a function that takes the coefficient p as its input and returns the step response of the corresponding first order transfer function $G(s)$:

$$G(s) = \frac{p}{s + p}$$

- then call your function inside of a `for` loop and overlay the step responses for three different values of p : `[1,5,30]`

- in order to complete this task, you will need to install the `python-control` module using the command `pip install python-control`
 - windows users should use the `Anaconda Prompt`
 - mac users should use the terminal
- use the function `control.TransferFunction` to create $G(s)$
- use the function `control.step_response` to find the step response