# ECIV 521 – Homework 1

Due on Monday, February 3, 2025

Annotate your script with information on what different sections of the code do, the meaning of each variable and the units used in the calculations.

Annotate figures and codes so that I can understand what you did.

Write your code in different sections (and annotate the code accordingly), first import the packages that you need, then read the input, do the calculations and at the end (if possible) print the results.

Leave empty lines between sections and instructions. It improves the code readability.

If blackboard does not allow you to upload your .py file, change the file extension to .txt and upload your code as a text file.

You can find help using the book and the following online resources
https://matplotlib.org/3.3.1/tutorials/intermediate/legend_guide.html
https://numpy.org/doc/stable/user/

## Exercise 1

Define an array of 10 real numbers in 3 different ways and discuss similarities and differences between the methods.

## Exercise 2

Pot the functions y1 = sinh(x), y2 = cosh(x), y3 = tanh(x).
Plot the results in a figure with two subplots. In subplot 1, the limits of the x axis are -10 and 10. In subplot 2 the limits of the x axis are -2.5 and 2.5. Save your figure as a .pdf file.
Use slicing instructions.

## Code 1

Write a code to compare the sine function as the sum of N terms between -5 and 5 radians.

$$sin(x) \approx \sum_{n=0}^{N} (-1)^n \frac{x^{2n+1}}{(2n+1)!}$$

Plot your results for different values of N and show how they differ from the sine function.