## Lab 3

Ch En 263 – Numerical Tools

Due: 16 Jan. 2024

## Instructions

- Complete the exercise(s) below, and submit the following files to Learning Suite:
  - Handwritten portion: scan each page (or take a picture) and combine them into a single pdf named: LastName\_FirstName\_Lab3.pdf
  - Excel portion: submit a workbook named LastName\_FirstName\_Lab3.xlsx where each worksheet tab is named "Problem\_1", "Problem\_2", etc.
  - Python portion: submit a separate file for each problem named LastName\_FirstName\_Lab3\_ProblemXX.py where XX is the problem number.
- $\bullet$  Warning: the LS assignment will close promptly at 11:59 pm and late assignments will only receive 50% credit.

## Lab Exercises

- 1. Use Excel for the following. Record your typed answer in a text box in the worksheet.
  - (a) Which data type would be the best for representing the number  $5 \times 10^{-14}$ ?
  - (b) Type the number 2000 in cell A1. In cell A2, enter the formula =  $A1 + 5 \times 10^{-14}$ . What is the result to 16 decimal points?
  - (c) Copy and paste the formula in cell A2 down the A-column so that you have a cumulative sum. Cell A3 should have the formula =  $A2 + 5 \times 10^{-14}$ , and cell A4 should have the formula =  $A3 + 5 \times 10^{-14}$ , and so on. What is the value to 16 decimal points at cell A51? What should the value be?
  - (d) Repeat the procedure from parts (b) and (c) using  $5 \times 10^{-11}$  in column B. What is the value to 16 decimal points in cell B51? What should the value be?
  - (e) Comment on the reason for any difference between your answer in parts (c) and (d)
- 2. Convert the following quanitites to the specified units. Try to do this without looking up any of the "Big 13" unit conversions. Record your answer in an Excel worksheet.
  - (a) 60 mi/hr to m/s
  - (b)  $72^{\circ}$ F to  $^{\circ}$ C
  - (c)  $1 \times 10^{-3} \text{ kg/(m \cdot s)}$  to slug/(ft \cdot s)
- 3. Do the following in Python and print the result to the console
  - (a) Convert Avagadro's number to an integer.
  - (b) Convert the speed of light in vacuum (in m/s) to a string.
  - (c) Convert 5/3 to a float.