IENG4544/6923

# Assignment/Lab 1

Objective of assignment/lab: explore various ways of measuring distance, and the costs of traveling via different modes.

1. Given two coordinates on the earth’s surface, what is the “straight-line” distance to travel there? Assume that you are travelling on the ocean.
   1. Find a formula for calculating the distance and implement it in excel. You can use excel formulas or write your own formula.
   2. Try it for a couple of coordinates, for example, London to Halifax.
   3. If using flying distance, is there a difference in the distance? Why or why not?
2. For two street addresses, find the driving distance between the two.
   1. Use Google maps.
   2. Search for an API that will allow you to do this inside of a program.
3. Using whatever information you can find online, calculate the following:
   1. Cost of moving a tonne of freight by airplane, per km.
   2. Cost of moving a tonne of freight by truck, per km.
   3. Cost of moving a tonne of freight by rail, per km.
   4. Cost of moving a tonne of freight by ship, per km.
   5. Comment on the scale of the differences.