

# **1E Pre-Lab Assignment**

**(due by Mon/Tue Lab)**

# 1E Pre-Lab: Python & Arduino Training

- Python: (~40 min.)

- Watch Python Video #1 how to bin your data and plot Histograms.
- Watch Python Video #2 for plotting 2 histograms on the same plot.
- Complete Python Notebook on Histograms and Gaussian.

- Arduino: (10 min.)

- Watch Video #1 on how to setup LED reaction time experiment

# 1E Pre-Lab: Your Reaction Time

➤ Please try a simple online test of Reaction Time. (10 min.)

○ <https://www.mathsisfun.com/games/reaction-time.html>

○ Write down your reaction times (5 x 4 = 20 times).

■ You are going to automate this experiment by Arduino.

■ Did you get the fastest for the last one (with a big circle)?

● My fastest time was both on the big circle and the normal circles

Times: 0.308s, 0.285s, 0.273s, 0.32s, 0.272s, 0.269s, 0.266s, 0.32s,  
0.304s, 0.255s, 0.289s, 0.269s, 0.256s, 0.287s, 0.29s, 0.284s, 0.286s,  
0.283s, 0.255s, 0.284s

# What is Reaction Time?

- Reaction Time is the fundamental time scale of our decision making process, starting from an external stimulation, resulting in an action (= muscle contraction).
  - As an example, read this article of [hitting a fastball](#).
- For more professional scientific studies, please read two papers below:
  - A comparative study of visual and auditory reaction times on the basis of gender and physical activity levels of medical first year students
  - Jain et al. (2015)
  - <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4456887/>
  - Factors influencing the latency of simple reaction time
  - Woods et al. (2015)
  - <https://www.frontiersin.org/articles/10.3389/fnhum.2015.00131/full>