

AerE344 Pre-Lab Assignment - Experiment Design Component

Lab # 02: Wind Tunnel Calibration

DUE: At lab time for Lab Experiment # 02

You will need to finish this pre-lab assignment before you come to the wind tunnel laboratory to do the experiments.

What you will be given for your experiment:

- Low-speed Undergraduate Wind Tunnel
- A pitot-static probe for flow velocity measurements
- Manometer water banks for pressure measurement

What your experiment needs to produce:

- Your final product for this experiment is a lab report about how to determine the calibration curve for a low-speed wind tunnel.
- Plot the pressure measurement data and the linear regression line of the measurement data to find the calibration coefficient parameter of the wind tunnel
- Plot the relationship between the flow velocity inside the test section of the wind tunnel as a function of the motor speed.

What you need to turn in for this assignment:

- You should review and understand the concepts of wind tunnel and wind tunnel testing.
- You should know the system setup of a typical low-speed wind tunnel and the functions of each component of the low-speed wind tunnel.
- You should review and understand the concepts of Bernoulli's equation.
- You should understand the concept of a pitot-static probe and how to use it for low-speed flow velocity measurements.