

AerE344 Pre-Lab Assignment - Experiment Design Component

Lab #06: Calibration of a Hot Wire Anemometer System

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:

- A thermometer for observing ambient lab conditions (for calculating atmospheric density).
- A pitot-static probe to measure wind tunnel test section velocity.
- A Mensor digital transducer to record the dynamic pressure (from the pitot-static probe).
- A single-wire hot-wire probe to be calibrated against the pitot-static tube.
- A Dantec mini-CTA constant temperature anemometer.
- An NI-DAQ board and acquisition PC to record hot-wire anemometer voltage output.

What your experiment needs to produce:

- Velocity versus voltage output of the hot wire anemometer (including a 4th order polynomial fit).
- You will use this plot for the velocity measurements in next AerE344 lab experiment.

What you need to turn in for this assignment:

- You should review and understand the fundamental technical basis of thermal-based anemometry techniques.
- You should review the recorded video of the AerE344 Pre-lab # 06.
- You should understand the differences between CCA and CTA approaches in using hotwire anemometry system for flow velocity measurements.