

Faculty Supervisor: Dr. Robert Ryan

Project Name: Determination of Human Powered Vehicle Drag

One of the design challenges in the Human Powered Vehicle (HPV) Capstone Project is to estimate and minimize the aerodynamic drag force experienced in actual road conditions. Generally, the seniors working on this project base their design on drag numbers from a fluid flow simulation program. Due to time limitations, the use of physical testing has not been possible.

This summer our goal is to perform two types of physical testing. One is to manufacture scale models of the 2013 HPV and test them in our wind tunnel. The second is to do road tests on the full scale vehicle. All of these techniques – flow simulation, wind tunnel testing, and road tests – have uncertainties associated with their results, and we hope to compare the drag numbers from the three approaches and see if they agree within experimental error. Having a greater understanding of the drag estimation methodology for these types of vehicles should lead to better HPV designs by our students in the future.