(40 pts) Approx. 3 days

The last part to our unit involves the construction and testing of some actual airfoils. In a later unit you'll use the information from this simulation and data collection to inform your construction of a long-distance glider. To start, we'll learn a little bit about the construction of airfoils, and then learn how to use an airfoil simulation tool called "FoilSim". The results of an investigation will be shared with other Aerospace students through the class spreadsheet before we decide which airfoils to build. Then, we'll create some actual airfoils out of foam and test their drag in our wind tunnel. Again, the data will be shared on our spreadsheet to inform future work. This part of the unit will be very time intensive as you work through the following:

1. Watch and take notes on the *Airfoil Overview* and *NASA's FoilSim III*. Take a full page of notes on airfoils and what FoilSim can do to inform our work.
2. Use FoilSim to complete the FoilSim Investigation, collecting data on different types of airfoils and sharing your results with other aerospace students through the class spreadsheet.
3. Watch the presentation *Building an Airfoil* that walks through the airfoil building process. Take some notes and plan out your construction procedure. Talk with Mr. Benshoof about the details of building your airfoil.
4. Build your airfoil using plans from FoilSim. It is suggested that you build your airfoil from foam. The profile should match (as closely as possible) the profile you tested on FoilSim. The width should be 0.5 inch narrower than the inner width of the TurBlo1000 test chamber.
5. Test your airfoil in the TurBlo1000 wind tunnel. Record your data from the force sensors and share it through the aerospace engineering class spreadsheet.

Part 3: Tasks	*5 points*	*4-3 points*	*2-1-0 points*
Airfoil Notes	+ You should have 1 full page of notes on airfoils, FoilSim, and the process of building an airfoil.	- Less than a full page of notes, or notes are noticeably lacking.	- Notes missing
FoilSim Investigation	+ Using FoilSim, find the requested information from the FoilSim Investigation sheet.	- Only some of the data properly collected.	- No data collected, or investigation not done.
	20-15 points	*14-9 points*	*8-0 points*
Build & Test Your Airfoil	+ Use FoilSim results to create airfoil plans. + Cut airfoil from foam with the right dimensions + Test your airfoil in the wind tunnel and record force data.	- You were not able to construct an airfoil - You did not test an airfoil in the wind tunnel	- Nothing was completed.
	5 points	*4-3 points*	*2-1-0 points*
Share AirFoil Data in Spreadsheet	+ Your data from the FoilSim investigation is shared to the class spreadsheet. + Your data from the airfoil build and wind tunnel tests is shared to the class spreadsheet.	N/A	*0 points only if:* - Your data is not all shared to the class spreadsheet.
Deadline	+ Your FoilSim investigation and airfoil construction & testing are both complete by **September 6, 2019.**	N/A	*0 points only if:* - Your unit projects are not completed by the unit deadline.
Achievement	Finish your air foil construction and testing by the unit deadline!		