SAE Aero Design Competition—Project Summary

Design Team: Michael Faison (Team Leader)
Jeremy Gibbs

Advisor: COL Blandino

Objective:

The purpose of this Cooperative Engineering Center Project was to build a RC aircraft that meets the standards set forth in the SAE Aero Design Competition for the Regular Class. To fulfill this purpose, we first took the time to read the regulations required by SAE. After reading this, we were also informed of the requirement that was implemented by VMI in order for us to known if we would be able to compete in the competition. This requirement is the designed aircraft must be capable of taking off on grass.

The first critical thing for us to do was to come up with a wing design. Once the wing design was specified, we then needed to choose an airfoil that had the lift capabilities that we felt would benefit our design the best. Once this airfoil was selected, we began doing calculations in order to see how long to make the wing and what the lift and drag characteristics were for our design. Once the calculations were completed, we moved on to the fuselage. For our fuselage, we used a 1 in^2 hollow aluminum tube with a thickness of 1/20 in. We decided to go with the aluminum because of its light weight and the reduction in the amount of drag in comparison to a traditional fuselage. Once the fuselage was in place, we began designing for the tail, rudder, servo placement, among other things. For the tail, we decided not to go with a traditional tail with ailerons. Instead, we incorporated an airfoil as the tail to add extra lift to

the aircraft instead of having the extra drag that is produced from regular tails. The last piece that was added to the aircraft that was the landing gears. We placed these on the front and back portion of the fuselage.

Despite all the time and hard work that was placed in the design and construction of our RC aircraft, it was not successful in the test flight that was allotted before the end of the school year. The only explanation we have for this unsuccessful flight is that the engine would not start. With the exception of the lack of flight, the aircraft met all the requirements set forth by the SAE Aero Design Competition.