Introduction
The SAE Aero Design Series is an annual competition that tests engineering student’s abilities to design and construct model aircrafts for payload competition. Union College has placed as high as 5th place at competition, and it is our intention to win this years competition.

Materials
Material selection is important to this design because reducing the empty weight of the plane increases the available payload capacity. This design uses balsa wood and aluminum-balsa composite beams to provide strength to the structure while reducing the overall weight.

Construction
All wood parts are cut using the laser cutting machine, and metal parts are cut using a table saw. Assembly requires epoxy and monokote shrink wrap to secure the internal skeleton structure.

Future Work
The primary goal is to complete construction of the aircraft for competition on April 26, 2012. The radio control and servo system will be programmed as well.

Design
The design of the wing and tail sections of the aircraft (seen in Figure 1 and Figure 2) are crucial to its performance at competition. The wing has been designed for high lift, low drag, and structural integrity. The tail has been designed to maintain stability and control. Each section has been redesigned to reduce the overall weight of the plane and to improve upon previous aircraft designs.

Finite Element Analysis
Structural analysis using SolidWorks Simulation finite element analysis was applied to the beam structure of the wing. As seen in Figure 3, a distributed load was applied and provided valuable information about the stresses on the surfaces.

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