Mission Objective: Carry as heavy a payload as possible

Mission Requirement: Aircraft and payload must weigh less than or equal to 55 lbs

Competition in Florida

System Performance Requirement: Aircraft must become airborne within 200 ft of ground roll

Aircraft L + W + H must be less than or equal to 175 in

Must use atmospheric conditions of competition location

Derived Requirement: High lift airfoil

Low Reynolds number airfoil

Non-zero incidence angle

Low aircraft weight

High torque motor

Rationale: High lift airfoil will increase the lift of the aircraft and enable a lighter air craft to carry a heavier payload

Low Reynolds number airfoil are designed to operate well in Low Re operating conditions and will improve performance

Decrease minimum takeoff speed

Reduce amount of structural material for maximum payload lifting

Increase amount of thrust which will increase amount of payload that can be carried

Testing/Verification: Airfoil characteristics (high CL, high camber, long tail)

Plot of CL vs. alpha for airfoils w/mission Re and high CL

Effect of incidence angle on takeoff and lifting characteristics

Ground roll analysis and verification

Thrust/torque motor testing results/explanation

Lightweight materials used (balsa when possible, bass when needed)