The University of Texas Arlington 3D Printed Aircraft Competition challenges the team in developing a lightweight aircraft to which all airframe components must be 3D printed with no size, configuration, weight, or material restrictions. The propeller and electrical components should be purchased off the shelf and operate for 8 seconds for propulsion purposes. The aircraft must operate within a 300 x 160 ft area and remain under 30 ft. There are 2 categories in which the team can compete which are the Longest Duration Flight and the Most Innovative Design.

The tailless aircraft was printed using Lightweight PLA and utilizes a HS 522 airfoil with a 60 in wingspan, 18 degree sweep angle, and 3 degrees dihedral angle. The interior structural design consists of 1 main spar with 3 other supplementary spars that run span-wise the entire length of the wing.

Flights were conducted at SDSU and at Black Mountain Park with the guidance of Dr. Norris.

The total components printed were 15 with the elevons, the winglets, the midbody, and the different wing sections. The total print time for all components was approximately 74 hours. They were assembled using CA glue and were printed using the Creality Ender 3 and Ender 3 V2.

Funded by:
SDSU Student Success Fee

Team Advisor & Mentor
Dr. Scott Shaffar, Dr. Charles Norris

Team AzTex Flight

Design Iterations

Figure 1: V1 48” Flying Wing
Figure 2: V2 60” Flying Wing
Figure 3: 48” Foam Prototype
Figure 4: LW PLA Wing Section
Figure 5: 60” Foam Prototype
Figure 5: 60” Assembled Foam Prototype

Foam Prototypes and Test Prints

Figure 6: Iteration 3 Design
Figure 7: HS 522 Airfoil
Figure 8: 3D Printed Wing of 3rd Iteration

Test Flights

Fabrication & Assembly