

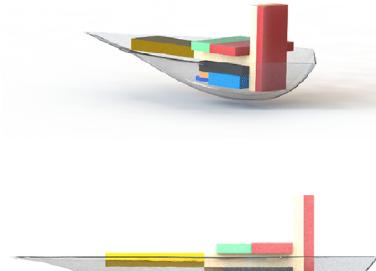
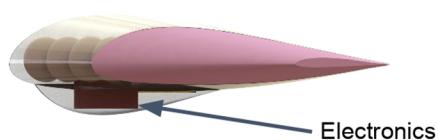
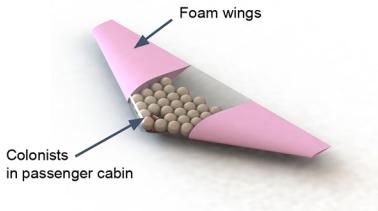
# LMU SAE Aero

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## Description:

SAE Aero is an international competition where colleges from around the world compete to build and then test independently designed remotely-controlled aircraft in a series of competitions. This year's competition includes the need to implement GPS and Gyroscope technology in order to autonomously guide 3 unpowered UAV drones onto a landing target.



## Features:

The UAV will be responsible for delivering sets of "colonists" (represented by ping-pong balls) to a specified drop zone safely. The craft is capable of stable flight, and utilizes two degrees of rotation to orient itself. The craft is unpowered, but will be released from a much larger main aircraft (to be implemented next semester) from approximately 100ft. The craft can communicate wirelessly with students in the pit, and will relay telemetry data to the pits from up to a mile away (in best conditions).

Electronics on-board each CDA
Arduino Nano
Accelerometer
GPS Module
GPS Module Coin Cell
xBee Pro
3.7 V 350 mAh LiPo Battery (for components)
xBee Pro Breakout Board
Servos
Servo LiPo battery

## Technology Used:

The LMU SAE Aero Colonist Delivery Aircraft are powered by a small Arduino Nano. This ATmega328P-powered microcontroller features numerous GPIO pins and several ADCs. The Nano will be receiving input from various sensors in order to calculate its heading.

From this information, it can programmatically calculate a flight path to the drop zone. The Aircraft is controlled via several small servo motors, and is capable of relaying critical telemetry data back to the pits using a ZigBee-powered XBee transmitter. This data will enable students in the pits to monitor the status of the craft. In the event of an emergency, the craft can also initiate a manually-triggered full-stop, ensuring the safety of bystanders.

