

MAE 434W/435
Senior Design Project Fall 2014-Spring 2015

Title:
2015 SAE Aero Design East

Description:

The SAE Aero Design competition is intended to provide undergraduate and graduate engineering students with a real-life engineering challenge. The competition has been designed to provide exposure to the kinds of situations that engineers face in their real-life work environment. First and foremost an aircraft design competition, students will find themselves performing trade studies and making compromises to arrive at a design solution that will optimally meet the mission requirements while still conforming to the configuration limitations.

An electric powered, radio control cargo aircraft is designed by the student team to SAE specifications. The aircraft design follows an overall length rule where the three extreme dimensions are added together and can't exceed a maximum value. University teams compete at a mass flying event where the objective is to fly a closed circuit course with the maximum payload possible. The teams are also scored on their technical merit through a design report and presentation. Last year ODU entered the contest for the first time and pulled a very respectable 12th place out of over 40 university entries. We were supported by sponsors and all students that wished to travel to the event were able to go. The aircraft is constructed from non-composite materials and last year's plane was built of balsa and lightweight plywood and covered with plastic film.



MAE students will have the opportunity to join three subgroups; Structures, Aerodynamics and Flight Mechanics, and Propulsion. We are looking for 8 – 10 MAE students. Students are involved in all facets of design and build from CAD through assembly and test. Solid Modeling CAD skills are very welcome. RC experience is very helpful but not required. We have the ODU Low Speed Wind Tunnel available for testing of wings, and propulsion systems and intend to use it. ECE students will contribute this year by evaluating the DC power limiter, RC control system and helping to run tests in the wind tunnel with propeller/motor combinations to optimize thrust. There are opportunities to fly the aircraft we build for all students if they have RC experience.

A video is available on you tube showing our 2014 aircraft being built and flown.

<https://www.youtube.com/watch?v=lgPCWPGJIHE>

If the link doesn't work just type in key words "ODU 2014 Aero East"

More information may be found from SAE: <http://students.sae.org/competitions/aerodesign/east/>

Is this project multidisciplinary? **YES** If so, with what department(s) will you be collaborating? **ECE** Please note if you are looking for a collaborator. **YES**

I am looking for a collaborator in ECE to help with DC motor control, optimal thrust generation thru wind tunnel characterization of motor/prop combinations, and optimizing the DC power limiter required in the contest

Number of students needed:

8-10 MAE 2-3 ECE

Suggested by (Faculty):

Landman

Supervised by (Faculty):

Landman