

University of Notre Dame
Dept. of Aerospace & Mechanical Engineering
AME 40462: Aerospace Design
Spring 2019

Course Syllabus

Instructor:

Professor Thomas Juliano
Hessert Laboratory Rm. 107
Office phone: 574-631-6089
tjuliano@nd.edu
Office hours by appointment

Time & Location:

MW 0800–1045, Stinson-Remick 212

Teaching Assistants:

Emma Farnan, efarnan@nd.edu
Barry Pawlowski, bpawlows@nd.edu
Jon Wells, jwells4@nd.edu
Kate Yates, kdisser@nd.edu

References:

T. C. Corke, *Design of Aircraft*
I. H. Abbott & A. E. von Doenhoff, *Theory of Wing Sections*
J. D. Anderson Jr., *Fundamentals of Aerodynamics*

Website:

<http://www.nd.edu/~ame40462/>

Objective:

Design, build, and fly a radio-controlled airplane to complete a particular mission. Aerodynamic, structural, and material choices are up to the student. The airplane's performance must be predicted before flight and assessed via analysis of flight test data.

Honor Code:

Notre Dame students are expected to abide by Academic Code of Honor Pledge. "As a member of the Notre Dame community, I will not participate in or tolerate academic dishonesty."

Assignments:

Every week, each team's leader must submit via e-mail a brief progress report (i.e., one paragraph or a bulleted list with figures and photographs as appropriate). (10% of total grade)

There are four major milestones, each with a deliverable assignment:

Preliminary Design Review: Week 4 (20%)

Each team shall submit a written report describing their proposed aircraft design. State the design drivers, explain the design choices made, describe the aircraft's vital statistics, predict its performance, etc. Each team shall make a 15-minute oral presentation to the class based on the contents of the written report.

Critical Design Review: Week 8 (10%)

Each team shall print a full set of drawings for their design. These drawings should reflect all details of the design. Part, assembly, and manufacturing drawings are suggested. Furthermore, provide a full parts list of all the components and supplies that require purchase. These deliverables will be discussed with the professor, TAs, and RC pilots. A revised parts list (if necessary) is due to the TAs two days later, the Friday morning before Spring Break.

Preflight Inspection: Week 13 (10%)

The finished airplane will be given a thorough preflight inspection. The as-built weight and c.g. will be determined. Radio receivers will be installed and bound to their controller. A performance metrics worksheet will be issued; the predicted performance of the airplane will be due at this time. Passing the ground check-out is required before flight test.

Final Report: Week 17 (Finals Week) (50%)

The final report is a complete description of the aircraft's design and performance. The preliminary design should be updated to reflect the as-built design; in particular, explain the motivation for any design changes. Analyze the flight-test data to determine the performance metrics. Compare the predicted to measured performance and explain noteworthy discrepancies.