January 27, 2024

MAE 159
Aircraft Design

SIZING REPORT

The purpose of the sizing study is to evaluate and compare the design of a commercial transport with a capacity of 210 passengers and design range of 3500 nautical miles. Two airplanes will be designed: 1. Using existing technology, and 2. Applying advanced technology. Primary focus should be on ***design analysis*** that describes the basis for the selection of trial designs and how the parameters were varied to establish the final design(s).

Required format:

I. (15%) Definition of the Problem
- design specifications
- goal(s) of the study

II. (60%) Design Analysis
- basis for selection of trial designs and parameter variations
- DOC versus performance
- basis for selection of the final design(s)
- specifications of the final design(s)
- payload-range plots (max payload = 55,000 lbs)

III. (25%) Conclusions
- Summarize the benefits of the advanced technologies and which ones appear to have the strongest effect.

Appendix (required)**:**

Present and describe the calculation procedure in detail like the sample calculation provided in class. Include a listing of the computer code to support the sample calculation.

Simplification: Candidate designs use 2 JT9D-class engines wing-mounted, 6 abreast seating, wing taper ratio = 0.35.

The Sizing Report is due at 11:59 PM on February 7. Late reports will not be accepted.