Hochschule für Angewandte Wissenschaften Hamburg
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Empennage Sizing: The Tail Lever Arm as a Percentage of Fuselage Length Determined from Statistics

Task for a project

Background

The area of the horizontal and vertical tail on an aircraft can be estimated quite easily with the tail volume coefficient. However, acceptable results can only be expected if the underlying statistics have been carefully compiled. Values of the tail volume coefficient have already been researched. However, the tail lever arm should also get systematically examined.

Task

Research should be carried out on the following topics:

- Review of the literature on the tail volume coefficient. Supplement given methods where necessary. See also: http://www.fzt.haw-hamburg.de/pers/Scholz/Aero/AERO_TN_TailSizing_13-04-15.pdf
- Review of the literature on the tail lever arm as a percentage value of the fuselage length (or in another meaningful relationship).
- Creation of your own statistics for the tail lever arm as a percentage value of the fuselage length (different types of aircraft; horizontal stabilizer and vertical stabilizer separately).
- Sample calculation. Discussion of the sample calculation.

The results are documented in a report. The relevant standards for report writing must be observed when creating the report.