



STUDIENDEPARTMENT FAHRZEUGTECHNIK UND FLUGZEUBAU

Selected Statistics in Aircraft Design

Task for a *Projekt 2*

Background

In aircraft design, the configuration (or: three-view drawing) of an aircraft evolves out of the requirements assigned to an aircraft. In contrast to other subjects in aeronautical engineering that deal with analysis, aircraft design deals with synthesis. This very nature of aircraft design makes the subject rely also heavily on statistics and past knowledge. The interest of this project is in passenger aircraft.

Task

In order to support activities in preliminary design, selected parameters have to be put in relation to each other. General trends should be made visible. This can be achieved most easily by drawing diagrams, correlating data and finally by trying to describe the correlations by equations. Examples of relationships that could be investigated are given below. Further interesting correlations should be discovered.

- Number of passengers and number of seats abreast.
- Length of the cockpit, fuselage tail section and length of cabin in the fuselage tail section.
- Fuselage length and length of the cargo compartments.
- Geometric relationships for engine integration.
- Sweep of the wing, cruise Mach number and entry into service.
- Sweep of the wing, dihedral and position of the wing.
- Length of the winglet, wing span and entry into service.
- Sweep of the wing, sweep of the horizontal tail and sweep of the vertical tail.
- Aspect ratio of the wing, aspect ratio of the horizontal tail and of the vertical tail.
- Taper ratio of the wing, taper ratio of the horizontal tail and taper ratio of the vertical tail.

The report has to be written according to German DIN standards on report writing!