

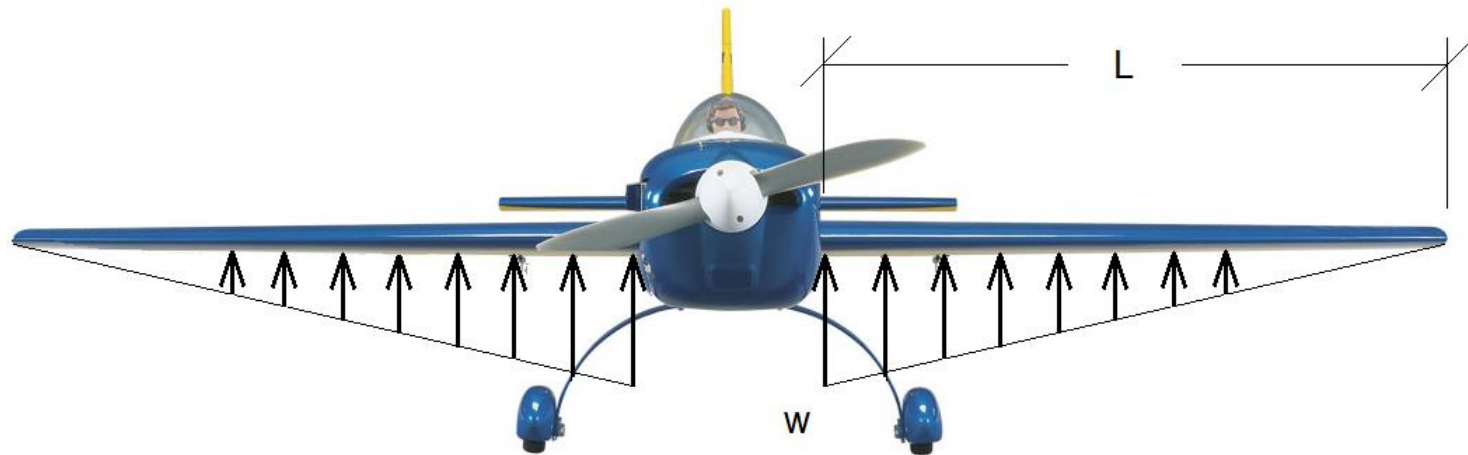


# AEE 461 Design of Aircraft Structures

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## Task #2 Calculation of Stresses under Bending

## Problem:



The Lift force carried by mostly wing spars with effective skin connected to spars. For the light aircraft shown in figure, the following are given:

The lift distribution  $w = 0.5 \text{ [N/mm]}$

The length of the wing  $L = 6 \text{ [m]}$

Objective: via using the tool you prepared for TASK 1, complete the following tasks:

- Decide which wing section is the most critical one,
- Calculate the necessary cross-sectional properties for the selected section in (a),
- Calculate the Stresses and Margin of Safety for the material given below:

Material allowables for Aluminum 7050 T7351:

$F_{tu} = 524 \text{ [MPa]}$ ,  $F_{cy} = 469 \text{ [MPa]}$