Assignment #7: Structures — ME 415

due 11/3/2021 before midnight via Learning Suite — **50 possible points**

7.1 The structural loading and altitude range of your aircraft are both too limited to require a rigorous structural analysis. Instead, analyze a two-passenger electric powered aircraft, i.e., an air taxi with the specifications provided below. Assume that for negative angles of attack stall occurs at the same $C_{L_{max}}$ (only negative). Construct a maneuver (no gusts) V-n diagram for this aircraft and a flight envelope diagram of TAS versus altitude. Be sure to both explain and show your work (not just the final diagram).

mass	1,500 kg
$C_{L_{max}}$	1.1
S_{ref}	20 m^2
max design speed (V_c)	75 m/s (EAS)
ceiling	8,000 ft

7.2 The bulk of your time should be spent on building your airplane. Ideally by the end of the week you should have an assembled airframe (the following week we will work on glide tests).

You will need to provide sufficient detail to demonstrate that you have accomplished an appropriate amount for a weekly assignment. Feel free to use any combination of descriptions, photos, videos you see fit. Note that you are describing your accomplishments. Not the teams. I recommend spending some time on your project report.