CFI Bootcamp
Pilot Training

Power Hour Lessons

Errors in FAA Publications
- We bet you're happy you are here!

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Overview

1. Ground reference maneuvers:
   a. Almost all ground reference images show the airplane's longitudinal axis on the ground track when there is wind. They should show the longitudinal axis inside or outside the ground track except when directly up or downwind.
   b. In the discussion on Turns around a point, they say the steepest bank will be where the groundspeed is highest, which they say is directly downwind. It will actually occur slightly later than that as the airplane's longitudinal axis was outside of the turn when making the turn downwind, so the speed doesn't achieve the fastest until a little past the downwind abeam the pylon.
   c. In eights on pylons, there is only the mention that wind drift while turning in the pylon is not required. They don't say why. The reason is that if you try to maintain a fixed radius of turn, the airplane must be crabbed by banking so that the longitudinal axis is either inside or outside the desired constant radius ground track. If you do that, the line of sight will change, and you can't pivot on the pylon. The only place to correct for wind drift is between the pylons on the straight and level part.
   d. The image for eights on pylons would only be correct in no wind; the distance from the pylon varies if there is wind. If there is wind, the steepest turn would be when turning from upwind over the pylon. The airpane can drift over the pylon if a shallow turn is used.
2. Steep Spiral - The discussion never discusses how to enter the maneuver, i.e., upwind, downwind, etc. The image shows the airplane entering on the upwind. Also, a definitive speed is not mentioned. It says to use a glide speed. So what's right? Enter upwind, and the speed should be 1.3 Vso. Going through all of the previous versions of the handbook, we find in the 2004 edition a discussion of how the airspeed changes with bank angle changes. More bank, more induced drag, so the airspeed falls. There was no discussion on how to enter until the 1965 version, which says to do more than ten spirals and upwind because you'll be ready to land or can make a modified pattern entry after the 360s. 1.3 Vso because it teaches precise airspeed control and load factor to avoid an accelerated stall.
3. PHAK Errors and omissions:
   a. Compass-turning errors are only partially explained. Turning errors occur because the compass dips when not at the equator, which moves the CG off the pivot point. When the airplane is turned, because of this, there will be acceleration errors on the magnet.
   b. Figure 5-2 is missing a vector. The lift that opposes weight. That should be directly over the weight vector. It explains why, in a stabilized climb, the lift that opposes weight is slightly less than the plane's weight. So, the net effect is slightly negative G.
   c. Figure 5-39 has a checkmark in the image for no reason.

d. Figure 5-44. While the image is correct, the text doesn't adequately explain why airplane velocity changes affect propeller-generated lift.
e. Figure 5-51 doesn't show how the propeller blades are at different angles of attack with an increased AOA. It just shows the net effect.
f. Pages 5-31 to 5-32 Gyroscopic action is listed as a turning tendency in a tail wheel airplane when the tail is pushed up. The text describes the effect overall but doesn't explain how and what effects are present during climbing and descending flight in particular. The effect causes a right-turning tendency upon rotation and a left-turning tendency when changing the flight path to descend.
g. Page 5-33 Load factors. The first paragraph describes load factor as a proportion of lift and weight due to banking and accelerating. It says it is the trigonometric effect of these two forces. While this is accurate, Figure 5-52 shows that the trigonometric effect between the reactive force from turning is centrifugal force and weight. Load factor is the equal and opposite force caused by total lift.
h. Page 6-6 T-Tail aircraft. The text mentions that control force increases as more AOA is applied. It also mentions that downwash helps with tail downforce in non T-Tail airplanes. In a T-Tail, the elevator is not affected by downwash, so the extent of travel must be increased. Also, there will be different control forces for the same elevator travel compared to non T-Tail airplanes. Page 7-18 text doesn't match the figure in 7-20. The text refers to a solenoid, but the figure doesn't have the same name. It's a contractor in the figure.

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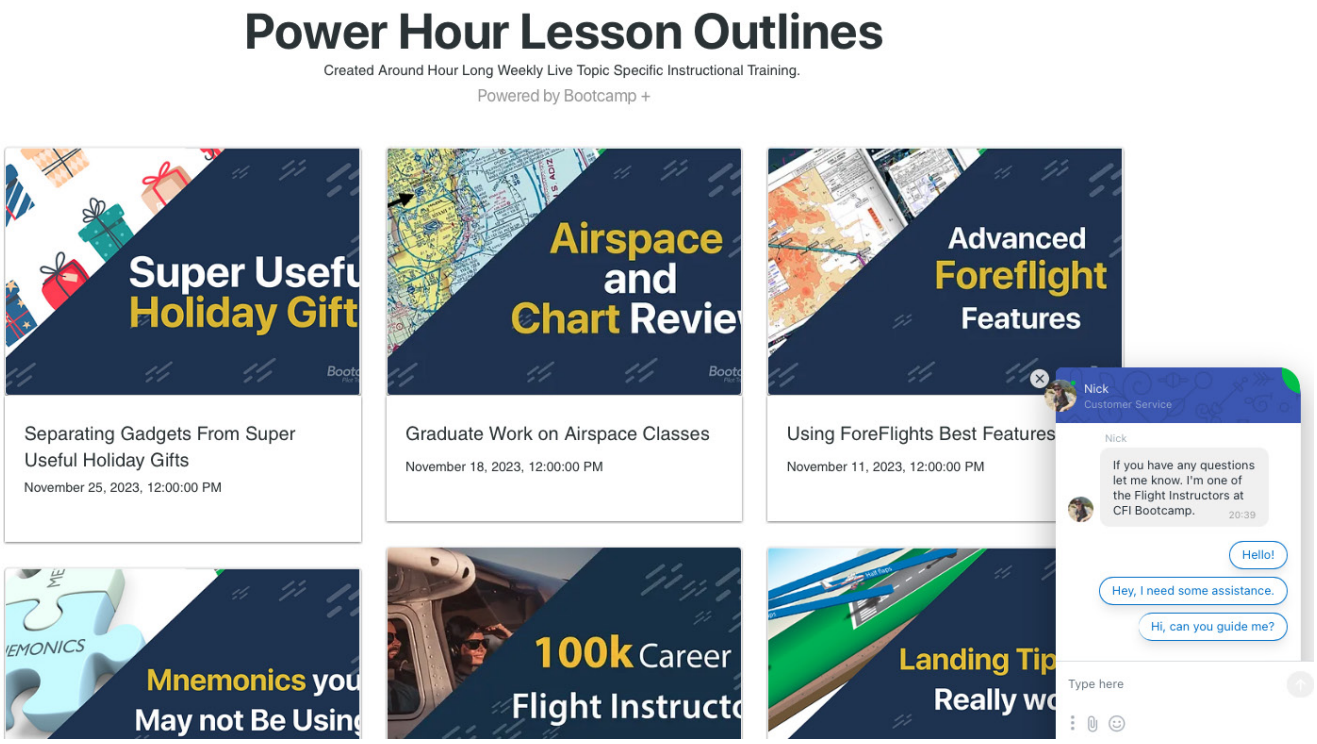

Future Power Hours:

December 30th 2023

Spring training starts soon
- How to get ahead of your pilot or instructor training when the snow melts.

January 6th 2024

Vmc - Loss of Directional Control Speed in a Multi-Engine Airplane Explained.
- How to avoid loss of control.

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March | 11th - 17th | (Remote or In-person) - 8 Seats open - 4 live stream spots.
April | 15th - 21st | (KVGT or Virtual) - 8 Seats open - 4 live stream spots.

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Jan | 15th - 17th | (Remote or In-person) - 4 Seats Open - 4 live stream spots
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Subject to Change

Locations in Palo Alto, CA (San Francisco Bay Area) and Miami Beach, FL
cfibootcamp.com

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