Left Turning Tendencies

Conditions: Dual /VFR

Objective: Introduce how physical & aerodynamic forces can contribute to a left turning tendency in propeller driven aircraft. These tendencies will be demonstrate during take-off, climb, slow flight, descent and during landing.

Notes & Comments

Completion Standards

- ❑ **Adheres to recommended safety precautions**
- ❑ **Understands the factors that cause left turning tendencies**
- ❑ **Identifies the flight regimes in which left turning tendencies are most pronounced.**
- ❑ **Can demonstrate how to compensate for left turning tendencies.**
- ❑ **Uses Checklists**

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Preparation for Flight & Preflight Discussion — 20- Min

- ❑ Equipment
  - Marker Board/Knee Board/ Map
  - Weather Briefing
- ❑ The Crew (*Pilot*)
  - I'M Safe Checklist
  - Delegate Duties
- ❑ The Airplane (*Plane*)
  - Aircraft Book
  - Inspections
  - Fuel
- ❑ The Operation
  - Where- Practice Area
  - When – Time Frame
  - Why – Left turning tendencies
  - How – Navigation, Fuel Requirements
- ❑ The Environment
  - Weather
  - Terrain / Obstructions
  - Other Aircraft, Collision Avoidance
- ❑ Left Turning Tendencies
  - Asymmetrical Trust or P-factor – Results from the descending propeller blade producing more thrust than the ascending blade.
  - Spiraling Slipstream – As the propeller rotates, it produces a backflow of air which wraps around the airplane and strikes the left side the vertical tail.
  - Torque –For every action there is an equal an opposite reaction; the propeller is revolving in on direction and an equal force is rotation the aircraft in the opposite direction.
  - Gyroscopic Precession – Any time a force is applied to deflect the propeller, the resulting force will be 90° ahead & in the same direction as the initial force.
- ❑ Flight regime
  - High power settings & AOA
  - Low airspeeds
- ❑ Compensate
  - Use of right rudder, rudder tab

Ground Operations — 20- Min

- ❑ Preflight Inspection (*Plane*)
  - Use of Checklists
  - Note: Rudder trim tab
- ❑ Engine Start-up
  - Use of checklists
- ❑ Taxi
  - Taxiway & Runway Markings
  - Crosswind taxi
- ❑ Before Take-off Checks
  - Use of checklists
- ❑ Normal Take-off / Landing
  - Use of checklists
  - Communication
  - Emphasize the left turning tendencies

Flight Maneuvers — 20- Min

- ❑ Take-off Roll & Climb
  - Note: Left Turning Tendency
- ❑ Straight & Level
  - Note: Left Turning Tendency
- ❑ Climbs / Turning climb
  - Collision Avoidance
  - Note: Left Turning Tendency
- ❑ Descents / Turning descents
  - Collision Avoidance
  - Note: Left Turning Tendency
- ❑ Slow flight
  - Clear the area
  - High power settings & AOA
  - Low airspeeds
  - Note: Left Turning Tendency

Post Flight — 15-Min

- ❑ Engine Shutdown
  - Use of Checklists
- ❑ Parking & Securing the Airplane
- ❑ Logbook Entry
- ❑ Review & Critique
- ❑ Next lesson, assignments