



FLIGHT TRAINING PROCEDURES

Single Engine

1 October 2017

RECORD OF CHANGES

1 October 2017

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Before taking Runway

1. Complete the required programming of GPS and/or VOR.
2. Complete **BEFORE TAKEOFF** checklist, review the **TAKEOFF** checklist and give departure brief.
3. **Lights, Camera, Action** Verify:
 - Lights - turn on any that are required
 - Camera – Transponder to ALT and correct squawk
 - Action – Mixture, fuel selector, fuel pump, runway heading, note time

Normal Takeoff

1. When aligned on the runway centerline: add full power and verify that full power is being developed by the tachometer (per the POH) and that the engine instruments are in the green arcs and airspeed is alive.
2. Rotate at V_R as recommended in POH, to a pitch attitude that will yield V_y .

Crosswind Takeoff

1. When aligned on the runway centerline: verify runway heading, **TURN THE AILERONS FULLY INTO THE WIND**, add full power and verify that full power is being developed by the tachometer (per the POH) and that the engine instruments are in the green arcs and airspeed is alive.
2. During the takeoff run, reduce the aileron deflection as appropriate to keep wings level without forcing downwind wheel down and maintain runway centerline.
3. **While having an appropriate amount of aileron deflection into the wind**, rotate at an airspeed above V_R , as appropriate, to a pitch attitude that will yield V_y .
4. Establish a crab angle to maintain the extended runway centerline or desired ground track.

Short-Field Takeoff

1. Complete **BEFORE TAKEOFF** checklist, review the **SHORT FIELD TAKEOFF** checklist and give departure brief.
2. **Deploy flaps as recommended in the POH,**
3. **Lights, Camera, Action** Verify:
 - i. Lights - turn on any that are required
 - ii. Camera – Transponder to ALT and correct squawk
 - iii. Action – Mixture, fuel selector, fuel pump, runway heading, note time
4. When aligned on the runway centerline at the end of the runway: **Apply full brakes**, add full power and verify that full power is being developed by the tachometer (per the POH), that the engine instruments are in the green arcs, and the airspeed is alive.
5. Release the brakes; confirm airspeed is alive.
6. Accelerate tail low until aircraft comes off the ground, then pitch to an attitude that will yield V_X .
7. At or obstacle clearance, reduce to a pitch attitude that will yield V_Y .
8. Retract the flaps in stages after confirming aircraft is above recommended flap airspeed. If none is recommended, begin retraction after passing obstacle height and above V_X .

Soft-Field Takeoff

1. Complete **BEFORE TAKEOFF** checklist, review the **SOFT FIELD TAKEOFF** checklist and give departure brief.
2. **Deploy flaps as recommended in the POH**
3. **Lights, Camera, Action** Verify:
 - Lights - turn on any that are required
 - Camera – Transponder to ALT and correct squawk
 - Action – Mixture, fuel selector, fuel pump, runway heading, note time
4. Taxi onto the runway with **full aft elevator** and align the airplane with the runway centerline; **DO NOT COME TO A STOP ON THE RUNWAY**. Refrain from using brakes where possible.
5. Add full power and verify that full power is being developed by the tachometer (per the POH), that the engine instruments are in the green arcs, and the airspeed is alive.
6. When the nose wheel leaves the ground, release backpressure so that forward visibility is maintained and the nose wheel remains off the ground.
7. When the aircraft becomes airborne level off in ground effect until the aircraft reaches V_Y (V_X if on a short or obstructed runway) and then begin climb out.
8. After obstacle clearance and above POH recommended airspeed, retract the flaps in stages.

Enroute Climb

1. When above 500' AGL and clear of enroute obstacles, reduce to a pitch attitude that will yield the correct climb airspeed per the POH (trim as required). Climbout airspeed may vary due to desired profile, engine temperatures, and visibility.
2. When above the traffic pattern altitude and clear of other traffic, review the **ENROUTE CLIMB** checklist.
3. When above density altitude recommended in the POH, lean the mixture per the POH.

Cruise

1. Reduce the pitch attitude to a straight and level.
2. When above V_{FE} KIAS, reduce the throttle to 2000-2700 RPM (as appropriate for desired cruise).
3. Trim the elevator
4. Lean the mixture per the POH (re-adjust throttle as necessary).
5. Turn the landing light OFF.
6. Review the **CRUISE** checklist.
7. Set Attitude Indicator to level and check Heading Indicator to compass. Repeat as needed or every 15 minutes, whichever is less

Descent

1. Mixture full rich below 3000'-5000' or as recommended in the POH.
2. Reduce the power to maintain the desired airspeed (cruise airspeed is recommended) while reducing pitch to attain desired rate of descent. (trim elevator as required).
3. Review the **DESCENT** checklist.

Normal Landing

1. Descend to traffic pattern altitude and accomplish the **BEFORE LANDING** and the **LANDING** checklists
2. Arrive at the traffic pattern altitude 1 to 2 miles before entering the pattern, if able.
3. **Verify the wind conditions**, and perform the GUMPSL check.
4. At midfield downwind **specify touchdown point**.
5. Abeam the point of intended touchdown, power as appropriate to reduce airspeed (low cruise).
6. Maintain altitude with backpressure and allow the airspeed to fall below V_{FE} .
7. Extend first setting of flaps and, establish recommended airspeed and begin descending
8. On base, extend the flaps as appropriate, establish pitch attitude for recommended airspeed.
9. On final, re-verify the wind conditions, extend the flaps as appropriate, maintain pitch attitude for recommended airspeed, and confirm UPS check (Undercarriage, **P**ump, **S**eatbelts).
10. Power controls altitude, pitch controls airspeed.
11. Reduce the throttle to idle when entering ground effect or as appropriate.
12. Round out to establish correct pitch attitude and hold flare to touchdown.

Crosswind Landing

1. Descend to traffic pattern altitude and accomplish the **BEFORE LANDING** and the **LANDING** checklist.
2. Arrive at the traffic pattern altitude 1 to 2 miles before entering the pattern, if able.
3. **Verify the wind conditions** and perform the GUMPSL check
4. At midfield downwind **specify touchdown point** and establish crab angle as appropriate.
5. Abeam the point of intended touchdown, power as appropriate to reduce airspeed.
6. Maintain altitude with backpressure and allow the airspeed to fall below V_{FE} .
7. Extend first setting of flaps (**if appropriate**), establish recommended airspeed, and begin descending
8. On base, extend the flaps as appropriate, establish pitch attitude for recommended airspeed.
9. On final, re-verify the wind conditions, extend the flaps as appropriate, maintain pitch attitude for recommended airspeed ($1.3 \times V_{SO} + \frac{1}{2}$ the gust factor), and confirm UPS check (Undercarriage, **P**ump, **S**eatbelts), **then establish a slide slip sufficient to cancel drift**.
10. On short final, add rudder to align the longitudinal axis of the airplane with the runway centerline and add aileron to maintain the airplane's flight path on the runway centerline. Adjust control applications as airspeed decays.
11. Reduce the power to idle when appropriate.
12. Touchdown on the upwind main gear first, then the other main, and then the nose wheel.
13. Gradually, **TURN THE AILERONS FULLY INTO THE WIND** to maintain centerline.

Short-Field Landing

1. Descend to traffic pattern altitude and accomplish the **BEFORE LANDING** and the **LANDING** checklists
2. Arrive at the traffic pattern altitude 1 to 2 miles before entering the pattern, if able.
3. **Verify the wind conditions**, and perform the GUMPSL check.
4. At midfield downwind **specify touchdown point**.
5. Abeam the point of intended touchdown, power as appropriate to reduce airspeed.
6. Maintain altitude with backpressure and allow the airspeed to fall below V_{FE} .
7. Extend first setting of flaps and, establish recommended airspeed and begin descending
8. On base, extend the flaps as appropriate, establish pitch attitude for recommended airspeed.
9. On final, extend the flaps to full (if appropriate) when landing is assured, maintain $1.3 \times V_{SO}$ or as appropriate
10. Reduce the power to idle when entering ground effect; maintain $1.3 \times V_{SO}$.
11. Touchdown on the upwind main gear first, then the other main, and then the nose wheel. A firmer than normal touchdown may be needed.
12. Once wheels are on the ground smoothly apply brakes to full (w/o skidding), retract flaps, and apply aerodynamic braking.

Soft-Field Landing

1. Descend to traffic pattern altitude and accomplish the **BEFORE LANDING** and the **LANDING** checklists
2. Arrive at the traffic pattern altitude 1 to 2 miles before entering the pattern, if able.
3. **Verify the wind conditions**, and perform the GUMPSL check.
4. At midfield downwind **specify touchdown point**.
5. Abeam the point of intended touchdown, power as appropriate to reduce airspeed.
6. Maintain altitude with backpressure and allow the airspeed to fall below V_{FE} .
7. Extend first setting of flaps and, establish recommended airspeed and begin descending
8. On base, extend the flaps as appropriate, establish pitch attitude for recommended airspeed.
9. On final, extend the flaps to full (if appropriate) when landing is assured, maintain $1.3 \times V_{SO}$ or as appropriate
10. On final, extend the flaps to 30° when landing is assured, maintain $1.3 \times V_{SO}$ (as appropriate).
11. When the runway is made, reduce the power to just above idle, roundout to minimum descent rate and hold the flare to roll the tires onto the runway.
12. Touch down gently on the main wheels and gradually add backpressure to protect the nose wheel. Carrying a slight amount of power here may assist in keeping the aircraft under control during rollout.
13. Allow the nose wheel to touch down gently and use **MINIMAL** braking.

180° Power-Off Landing

1. When abeam the point of intended landing on downwind close the throttle.
2. Add backpressure to maintain altitude and establish best glide (VG).
3. Allow the airplane to descend when best glide is established.
4. **Trim as necessary.**
5. Using a medium to slightly steeper banked turn, turn base at an appropriate distance from the runway **based on the strength of the wind.**
6. Deploy flaps as necessary.
7. **Re-trim to maintain best glide.**
8. While on final, use **SLIGHT** adjustments of the pitch attitude and the flap setting to maintain a constant glide angle to the point of intended landing.
9. **NEVER TRY TO STRETCH THE GLIDE OR RETRACT THE FLAPS** to reach the point of intended landing. Slips, if authorized, may be used to steepen glide slope if required.

Go Around (Balked Landing)

1. Apply full power.
2. Pitch to a climb attitude for V_x .
3. Retract the flaps one setting if full flaps were being used.
4. When a positive rate of climb is achieved and clear of any obstacles, pitch for V_y and continue to retract any flaps.
5. Reconfigure, trim as necessary, continue climb at V_y

Slow Flight

1. Select an altitude to allow for the maneuver to be completed no lower than 1500' AGL.
2. Complete clearing turns, 90° left then right, moderate bank. Make a radio call.
3. Configure the aircraft (GUMPSL):
 - Ignition **Both**
 - Throttle **Low cruise**
 - Altitude..... **Maintain** (do not allow a sink rate to develop)
 - Mixture **Adjusted per POH**
 - Prop..... **Full Forward**
 - Flaps **First setting** (below V_{FE})
 - Fuel Shut Pump..... **On**
 - Fuel Selector..... **Both**
 - Flaps **Continue to lower until full down**
4. Once in the region of reverse command, gradually add power and continue to slow the aircraft, adding backpressure to hold altitude.
5. Add right rudder as necessary to maintain coordination.
6. Slow the aircraft until the first stall warning (horn, buffet, etc), note the speed, then increase speed approximately 5-10 knots above the noted speed. Should the speed decay to the point where there is an additional stall warning, take immediate action to eliminate the warning.

NOTE: As airspeed deteriorates you will have to increase control displacement to maintain the same attitude

Recovery

1. Reduce the pitch attitude, throttle to full power, and allow airspeed to increase.
2. Retract the flaps to next setting
3. Continue to retract flaps incrementally, ensuring obstacle clearance and rate of climb. If retracting landing gear use the following sequence: First flaps, Landing Gear, Remaining flaps
4. Above V_{FE} , return to cruise flight per the Cruise procedure.

Power-Off Stall (Arrival or Landing Stall)

1. Select an altitude to allow for the maneuver to be completed no lower than 1500' AGL.
2. Complete two 90° clearing turns, left then right, using moderate bank.
3. Announce intentions over the radio
4. Configure the aircraft (GUMPSL):
 - Ignition **Both**
 - Throttle **High Idle**
 - Mixture **Adjusted per POH**
 - Landing gear (if equipped)..... **Down** below V_{LE}
 - Prop (if equipped)..... **Full Forward**
 - Flaps **Landing configuration**
 - Fuel Pump **On**
 - Fuel Selector..... **Both/Fullest tank**
5. **Establish a descent at final approach speed for 100'.**
6. Maintain wings level or establish up to a 20° bank **coordinated** turn as instructed.
7. Reduce the power to idle and add backpressure until the critical angle of attack is reached.
8. Recognize the first aerodynamic indication of the oncoming stall by vocalizing it.
9. Continue to maintain back pressure until a full stall occurs.

Recovery

1. Recover promptly after a full stall has occurred (Private ACS) or first indication (Commercial ACS).
2. Decrease the angle of attack.
3. Apply full power.
4. When controls firm up sufficiently (above V_S), smoothly raise the nose to minimize altitude loss. Establish a climb at V_X .
5. **Maintain Coordination**
6. When a positive rate of climb is achieved and clear of any obstacles, raise the gear and retract the flaps incrementally to improve climb
7. Climb at V_X for 100'.
8. Return to cruise flight per the Cruise procedure.

Power-On Stall (Departure Stall)

1. Select an altitude to allow for the maneuver to be completed no lower than 1500' AGL.
2. Complete two 90° clearing turns, left then right, using moderate bank.
3. Configure the aircraft (GUMPSL):
 - Ignition **Both**
 - Throttle **High Idle**
 - Mixture **Adjusted per POH**
 - Landing gear (if equipped)..... **Down** below V_{LE}
 - Prop (if equipped)..... **Full Forward**
 - Flaps **0° or recommend takeoff setting**
 - Fuel Pump **On**
 - Fuel Selector..... **Both/Fullest tank**
4. At rotation speed, add back pressure and a minimum of 65% power until the critical angle of attack is reached.
5. Maintain wings level or establish up to a 20° bank **coordinated** turn as instructed.
6. Recognize the first aerodynamic indication of the oncoming stall by vocalizing it.
7. **MAINTAIN COORDINATION THROUGHOUT THE MANEUVER.**

Recovery

1. Recover promptly after a full stall has occurred (Private ACS) or first indication (Commercial ACS).
2. Decrease the angle of attack only enough to get the aircraft flying again, then neutralize pitch.
3. Apply full power.
4. Level the wings, maintaining coordination.
5. Establish a climb at V_X until pre-determined altitude is reached.
6. Raise landing gear, if equipped
7. Return to cruise flight per the Cruise procedure.

Steep Turns

1. Select an altitude to allow for the maneuver to be completed no lower than 1500' AGL.
2. Complete two 90° clearing turns in opposite directions.
3. Configure the aircraft:
 - Ignition **Both**
 - Throttle **Medium cruise**
 - Mixture **Adjusted per POH**
 - Flaps **0°**
 - Fuel Selector..... **Both**
 - Landing light..... **ON**
4. At or below V_A , smoothly roll into a 45° (50° for commercial standards) bank.
5. Add power as necessary to maintain airspeed and backpressure as necessary to maintain altitude.
6. Perform one 360° turn in each direction with no straight-and-level in between
7. Lead rollout by 10° - 15°
8. **Re-establish cruising flight** at entry altitude and heading

Rectangular Course

1. Maintain an altitude between 800' and 1000' AGL.
2. Note the approximate wind direction and velocity on the ground or use nearest observed wind information
3. Find an area that is clear of obstructions and has a suitable emergency landing area and a well-defined rectangular area at least one mile per side.
4. Complete two 90° clearing turns, one in each direction, and advise traffic via radio call.
5. Configure the aircraft:

Ignition	Both
Throttle	Medium cruise
Mixture	Adjusted per POH
Flaps	0°
Fuel Shut Off Valve	ON
Fuel Selector.....	Both
Landing light.....	ON
6. At V_A, enter the maneuver at a 45° angle to the downwind about ½ mile off the selected line preferably on the left side for visibility.
7. Maintain a constant distance away from the course always by crabbing into the wind and varying the bank angle during the turns according to the groundspeed.
8. **Re-establish cruising flight.**

Turns Around a Point

1. Maintain an altitude between 800' – 1000' AGL.
2. Note the approximate wind direction and velocity on the ground or use nearest observed wind information
3. Find an area that is clear of obstructions and has a suitable emergency landing area and a well-defined point.
4. Complete two 90° clearing turns, one in each direction, and advise traffic via radio call.
5. Configure the aircraft:

Primer	Locked
Ignition	Both
Throttle	Medium cruise
Mixture	Adjusted per POH
Flaps	0°
Fuel Shut Off Valve	On
Fuel Selector.....	Both
Landing light.....	ON
6. Plan for left turns to improve visibility. At V_A, enter the maneuver downwind with the point directly down the left wing.
7. Maintain a constant distance away from point at all times by varying the bank angle during the turns according to the groundspeed.
8. Complete at least **one circuit** around the point unless specified by CFI or DPE.
9. **Re-establish cruising flight.**

S-Turns

1. Maintain an altitude between 800' - 1000' AGL.
2. Note the approximate wind direction and velocity on the ground or use nearest observed wind information
3. Find an area that is clear of obstructions and has suitable emergency landing areas.
4. Complete two 90° clearing turns, one in each direction, and advise traffic via radio call
5. Configure the aircraft:
 - Ignition **Both**
 - Throttle **Approx. 2200' RPM**
 - Mixture **Adjusted per POH**
 - Flaps **0°**
 - Fuel Shut Off Valve **On**
 - Fuel Selector..... **Both**
6. Find a reference line (road, railroad, field line, etc.) running perpendicular to the wind.
7. At V_A , enter the maneuver downwind.
8. Complete one equal radius semi-circle on each side of the road **as a minimum**. Turns should be completed so that the aircraft crosses the reference line at a 90° angle each time.
9. **Re-establish cruising flight.**

Steep Spirals

1. Select an altitude to allow for three 360° turns to be completed no lower than 1500' AGL.
2. Note the approximate wind direction and velocity on the ground or use nearest observed wind information
3. Complete two 90° clearing turns, one in each direction, and advise traffic via radio.
4. Begin maneuver upwind; plan for left turns to improve visibility.
5. Configure aircraft:
 - Ignition **Both**
 - Throttle **Low cruise**
 - Mixture **Adjusted per POH**
 - Flaps **0°**
 - Fuel Pump..... **On**
 - Fuel Selector..... **Both**
6. Select a point so that the radius of the turn will not exceed 60° of bank (¼ to ½ mile).
7. Pull the throttle to idle just prior to arriving over the point. Hold the nose up while speed decreases to V_G
8. Begin the turn abeam the point and hold a constant airspeed through the maneuver (V_G).
9. Maintain a constant radius around the point by adjusting bank angle on upwind and downwind sides.
10. Monitor engine temps and clear engine if required
11. Recover at least 1500' AGL on specified or entry heading.
12. **Re-establish cruise flight or climb to specified altitude.**

Chandelle

1. Select an altitude to allow for the maneuver to be completed no lower than 1500' AGL.
2. Complete two 90° clearing turns, one in each direction, Advise traffic via radio call.
3. Configure the aircraft:
 - Ignition **Both**
 - Throttle **Medium Cruise**
 - Mixture **Adjusted per POH**
 - Prop, if equipped..... **Full Forward**
 - Flaps **0°**
 - Fuel Pump..... **On**
 - Fuel Selector..... **Both/Fullest tank**
4. Select a point 90° off the wing in the desired direction of turn or us a reference heading.
5. When level airspeed has stabilized, smoothly roll into a coordinated 30° bank (per the ACS) and add full power.
6. Apply back pressure to initiate a coordinated climbing turn. Plan the pitch rate to give maximum pitch angle at 90° of turn. (The selected pitch attitude should yield $V_s + 5$ knots at the 180° point.)
7. Maintain a constant bank angle during the first 90° of turn, while increasing pitch angle
8. In the second 90° of turn hold the pitch angle achieved at the 90° point, while smoothly decreasing the bank angle to roll out wings level at the 180° point. Airspeed should be $V_s + 5$ knots.
9. **MAINTAIN COORDINATION THROUGHOUT THE MANEUVER.** Control inputs will have to be increased to maintain the same performance as airspeed decreases.
10. Re-establish cruising flight without losing more than 50' from the final altitude.

Lazy Eight

1. Select an altitude to allow for the maneuver to be completed no lower than 1500' AGL.
2. Complete two 90° clearing turns, one in each direction, and advise traffic via radio call.
3. Configure the aircraft:
 - Ignition **Both**
 - Throttle **Medium Cruise**
 - Mixture **Adjusted per POH**
 - Prop, if equipped..... **Full Forward**
 - Flaps **0°**
 - Fuel Pump..... **On**
 - Fuel Selector..... **Both/Fullest tank**
4. Select a prominent 45°, 90°, & 135° reference points or a reference line.
5. When airspeed has stabilized, smoothly increase the pitch attitude and the bank angle to achieve 15° of bank and maximum positive pitch angle of 15°-20° at 45° of turn.
6. From the 45° point, decrease the pitch attitude and continue to increase the bank to 30°. The nose should pass through the horizon at the 90° of turn point in a 30° bank
7. From the 90° point, allow the nose to continue down below the horizon toward a negative 15°-20° at the 135° point. From the 90° point a gradual rollout should occur such that the aircraft achieves wings level at the 180° point.
8. From the 135° point, increase the pitch attitude and continue to decrease the bank angle to achieve straight and level flight at the entry altitude and airspeed at the 180° point.
9. Repeat in the opposite direction.
10. **MAINTAIN COORDINATION THROUGHOUT THE MANEUVER.**
11. **Re-establish cruise flight.**

Eights on Pylon

1. Establish and maintain pivotal altitude.
2. Complete two 90° clearing turns, one in each direction, and advise traffic via radio call.
3. Configure the aircraft during the last 90° of turn:

Ignition	Both
Throttle	Medium Cruise
Mixture	Adjusted per POH
Flaps	0°
Fuel Pump.....	On
Fuel Selector.....	Both
4. Select two pylons along a line perpendicular to the wind that will briefly allow for straight and level flight between them.
5. Maintain airspeed at or below V_A .
6. Enter the maneuver on a diagonal downwind between the pylons. Plan the first turn to the left, if possible
7. Maintain wing tip on pylons by pitching to vary pivotal altitude in response to anticipated groundspeed changes.
8. Maintain coordination throughout maneuver.
9. **Re-establish cruising flight.**

Secondary Stall

1. Select an altitude to allow for the maneuver to be completed no lower than 3000' AGL (for safety reasons).
2. Complete two 90° clearing turns, one in each direction, and advise traffic via radio call.
3. Configure the aircraft during the last 90° of turn for a **Power Off Stall** (clean or dirty configuration) or a **Power On Stall** according to the procedures provided earlier in this manual.
4. Induce a stall according to the procedures provided earlier in this manual
5. After initiating a partial recovery with elevator control **only**; induce another stall.

NOTE: This maneuver may also be demonstrated using excessive nose up trim, as in the landing configuration when a go-around is attempted. See procedure for Elevator Trim Stall below.

Recovery

1. Recover promptly after secondary stall has occurred.
2. Decrease the angle of attack.
3. Apply full power.
4. When controls firm up sufficiently (above V_S), smoothly raise the nose to minimize altitude loss. Establish a climb at V_X .
5. **Maintain Coordination**
6. When a positive rate of climb is achieved and clear of any obstacles, raise the gear and retract the flaps incrementally to improve climb
7. Climb at V_X for 100'.
8. Return to cruise flight per the Cruise procedure.

Accelerated Stall

1. Select an altitude to allow for the maneuver to be completed no lower than 3000' AGL (per the ACS).
2. Complete two 90° clearing turns, one in each direction, and advise traffic via radio.
3. Configure the aircraft:
 - Ignition **Both**
 - Throttle **High Idle**
 - Mixture **Adjusted per POH**
 - Flaps **0°**
 - Fuel Shutoff Valve **On**
 - Fuel Selector..... **Both**
4. Maintain altitude with backpressure and allow airspeed to stabilize at approximately V_Y .
5. Establish a bank angle of 45°.
6. Add backpressure as necessary to maintain altitude.
7. After the bank is established, increase back elevator pressure firmly to induce a stall.
8. Recover at the first indication of a stall; **under no circumstance allow a prolonged stall condition.**
9. **MAINTAIN COORDINATION THROUGHOUT THE MANEUVER.**

Recovery

1. Recover promptly after secondary stall has occurred.
2. Decrease the angle of attack.
3. Apply full power.
4. When controls firm up sufficiently (above V_S), smoothly raise the nose to minimize altitude loss. Establish a climb at V_X .
5. **Maintain Coordination**
6. When a positive rate of climb is achieved and clear of any obstacles, raise the gear and retract the flaps incrementally to improve climb
7. Climb at V_X for 100'.
8. Return to cruise flight per the Cruise procedure.

Cross-Control Stall

1. Select an altitude to allow for the maneuver to be completed no lower than 3000' AGL (for safety reasons).
2. Complete clearing turns either alternate 90° turns or one 180° turn, moderate bank.
3. Configure the aircraft during the last 90° of turn:
 - Ignition **Both**
 - Throttle **Idle**
 - Mixture **Adjusted per POH**
 - Flaps **0°**
 - Fuel Shutoff Valve **On**
 - Fuel Selector..... **Both**
4. Establish a descent at final approach airspeed.
5. Establish a medium bank angle turn.
6. During the turn, add excessive rudder in the direction of the turn, maintain a constant bank angle using opposite direction aileron, and add back elevator pressure to keep the nose from lowering.
7. Add more control pressure until an **imminent stall** is induced.

Recovery

1. Recover promptly after secondary stall has occurred.
2. Decrease the angle of attack.
3. Apply full power.
4. When controls firm up sufficiently (above V_S), smoothly raise the nose to minimize altitude loss. Establish a climb at V_X .
5. **Maintain Coordination**
6. When a positive rate of climb is achieved and clear of any obstacles, raise the gear and retract the flaps incrementally to improve climb
7. Climb at V_X for 100'.
8. Return to cruise flight per the Cruise procedure.

Elevator Trim Stall

1. Select an altitude to allow for the maneuver to be completed no lower than 3000' AGL (for safety reasons).
2. Complete clearing turns either alternate 90° turns or one 180° turn, moderate bank.
3. Configure the aircraft:

Ignition	Both
Throttle	High Idle
Mixture	Adjusted per POH
Flaps	Final approach configuration
Fuel Shutoff Valve	On
Fuel Selector.....	Both
4. Establish a descent at final approach airspeed.
5. **Trim the aircraft to maintain the descent (full nose up trim)**
6. Add full power and allow the aircraft to attain a pitch attitude that will exceed the critical angle of attack. **DO NOT ALLOW PITCH ATTITUDE TO EXCEED 30° NOSE UP**
7. When it is apparent that a stall is approaching, recover.
(Recover when the airplane comes to an “unusual climb attitude”)

Recovery

1. Recover promptly after stall has occurred.
2. Decrease the angle of attack; re-trim promptly
3. Apply full power if not already applied.
4. When controls firm up sufficiently (above V_S), smoothly raise the nose to minimize altitude loss. Establish a climb at V_X .
5. **Maintain Coordination**
6. When a positive rate of climb is achieved and clear of any obstacles, raise the gear and retract the flaps incrementally to improve climb
7. Climb at V_X for 100'.
8. Return to cruise flight per the Cruise procedure.

Emergency Descent

1. Complete two 90° clearing turns , one in each direction, and advise traffic via radio call.
2. Configure the aircraft during the last 90° of turn:

Ignition	Both
Throttle	Idle
Landing gear, if equipped.....	Down when below V_{LE}
Mixture	Adjusted per POH
Prop, if equipped.....	As required
Fuel Pump.....	On
Fuel Selector.....	Both

3. Establish a descent at recommended airspeed or bottom of green arc.

***Note:** For training purposes, keep airspeed below V_{NO}. However, in a true emergency descent, a higher airspeed (not to exceed V_{NE}) would be used.

-If minimal stress on the airframe is required or if more drag is required, then the descent should incorporate the use of flaps. (Refer to AFM)

4. Add full power and return to cruise flight using the **Cruise** procedure.

Instrument Procedures

Instrument Preflight

1. During the taxi to the runway, check the following items:
 - Magnetic Compass**Fluid full, moves freely, Indicates known heading**
 - Attitude Indicator **Stable and erect within 5 minutes, Does not bank more than 5° in level turns**
 - Altimeter **Correct setting, within 75' of elevation**
 - Turn Coordinator **Mini plane turns to the inside, Ball moves to outside during turns**
 - Directional Gyro..... **Spins the correct direction in turns**
 - VSI..... **Note the level indication**

Constant Airspeed Climb

1. Complete the following flow to begin the climb:
 - Throttle **Full**
 - Mixture **Adjusted per POH**
 - Fuel Selector..... **Both**
2. Pitch for V_A (or as assigned by instructor).
3. Climb to desired altitude (as assigned by instructor).
4. Maintain the airspeed assigned, using the instruments maintain the heading and coordination.
5. When 50' prior to assigned altitude, apply forward pressure to level the attitude.
6. Return to cruise flight using the **Cruise** procedure.

Constant Airspeed Descent

1. Complete the following flow to begin the descent:
 - Throttle**Reduce as desired**
 - Mixture **Adjusted per POH**
 - Fuel Selector..... **Both**
 - Flaps**As desired**
2. Pitch for V_A (or as assigned by instructor).
3. Descend to desired altitude (as assigned by instructor).
4. Maintain the airspeed assigned, using the instruments maintain the heading and coordination.
5. When 50' prior to assigned altitude, apply back pressure to level the attitude.
6. Return to cruise flight using the **Cruise** procedure.

Constant Rate Climb

1. Complete the following flow to begin the climb:
Throttle**Full**
Mixture **Adjusted per POH**
Fuel Selector..... **Both**
2. Pitch up for a 500 FPM climb (or as assigned by instructor).
3. Climb to desired altitude (as assigned by instructor).
4. Maintain the airspeed assigned, using the instruments maintain the heading and coordination.
5. When 50' prior to assigned altitude, apply forward pressure to level the attitude.
6. Return to cruise flight using the **Cruise** procedure.

Constant Rate Descent

1. Complete the following flow to begin the descent:
Throttle**Reduce as desired**
Mixture **Adjusted per POH**
Fuel Selector..... **Both**
Flaps**As desired**
2. Pitch down for a 500 FPM descent (or as assigned by instructor).
3. Descend to desired altitude (as assigned by instructor).
4. Maintain the airspeed assigned, using the instruments maintain the heading and coordination.
5. When 50' prior to assigned altitude, apply back pressure to level the attitude.
6. Return to cruise flight using the **Cruise** procedure.