Middle Georgia State University

MGA ARCHER PROCEDURE PACKET

VERSION 2025

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Checklists and Briefings

Takeoff Briefing

Takeoffs are briefed so that the pilots have a clear understanding of the runway environment, emergency actions that may be required during the ground roll, initial takeoff, and departure.

Procedure:

1. Determine which pilot will be PIC in case of emergency
2. Brief will be conducted (from memory) in the runup area prior to call for departure and crossing the hold short line. The Brief consists of five areas of concentration:
   - Runway Information
   - Engine Failure / Emergency During Ground Roll
   - Engine Failure with runway remaining
   - Engine Failure without runway remaining
   - Engine Failure above 1,000' AGL

Briefing Script:

- "This will be a _____ takeoff from Runway ____ by the pilot in the _____ seat."
- "If we have an **ENGINE FAILURE or OTHER EMERGENCY DURING THE GROUND ROLL,** I will bring throttle to idle, apply brakes, and exit the runway if able."
- "If we have an **ENGINE FAILURE with runway remaining,** we will close throttle and land straight ahead."
- "If we have an **ENGINE FAILURE without runway remaining,** we will select a suitable landing spot to our front, or slightly to our side. If time permits, FUEL SELECTOR OFF, MIXTURE FULL LEAN, maintain positive control of aircraft and make an announcement to tower declaring an emergency"
- "If we have an **ENGINE FAILURE ABOVE 1,000' AGL**, turn back to the airport environment, and attempt landing on appropriate surface. Maintain control of the airplane and declare emergency to tower."

Pre-Maneuver Checklist

The Pre-Maneuver Checklist is performed before each training maneuver. This checklist serves as a baseline for aircraft prior to configuration for the maneuver.

Procedure:

LOCATE nearest field for landing in case of emergency.
GUMPS Check

1) Gas - Adequate
2) Undercarriage – N/A in an Archer
3) Mixture - FULL RICH
4) Prop - N/A in an Archer
5) Switches - Lights and Fuel Pumps ON

CLEARING Turns
(Coordinate with any traffic on Dispatch frequency (123.300) if they are within 3 to 4 miles.)

Ground Reference Maneuvers

Turns Around a Point (Private, CFI)

The objective of Turns Around a Point is to develop the pilot's skill in maintaining a specific relationship between the ground and the aircraft. It consists of two constant radius, coordinated, 360º turns.

Procedure:

1. Pre-Maneuver Checklist
2. Select altitude between **600' - 1,000' AGL (recommend 1,200' MSL)**, in non-congested area
3. Determine wind direction for downwind (tailwind) entry
4. Select outside visual reference (crossroads, tree, prominent landmark, *refrain from using buildings as reference point*), practice CFIT and wire strike avoidance
5. Enter at **cruise speed (100 - 115 KIAS)**, bug reference heading
6. Execute turns around the point, at least two 360º turns are required, unless otherwise directed by your instructor/evaluator.
7. Apply appropriate wind correction for each segment of turn
    a. *Highest* groundspeed = *steepest* bank
    b. *Slowest* groundspeed = most *shallow* bank
8. Exit maneuver on the entry heading

Airman Certification Standards:

- Altitude: +/- 100'
- Airspeed: +/- 10 Knots

Common Errors:

- Failure to clear the area, collision hazards
- Poor coordination
- Failure to maintain airspeed and altitude
- Failure to maintain constant radius around point

S-Turns Across a Road (Private, CFI)

The objective of S-turns Across a Road is track two equidistant, constant radii, half turns across a road, while maintaining coordinated flight, and applying proper wind-drift correction.

Procedure:

1. Pre-Maneuver Checklist
2. Select altitude between **600' - 1,000' AGL (recommend 1,200' MSL)**, in non-congested area
3. Determine wind direction for downwind (tailwind) entry
4. Select straight road or other reference (wires, tree line), perpendicular to the wind
5. Enter at **cruise speed (100 - 115 KIAS)**, bug reference heading
6. Execute two 180º turns crossing the road perpendicular each time.
7. Apply appropriate wind correction for each segment of turn
    a. *Highest* groundspeed = *steepest* bank
    b. *Slowest* groundspeed = most *shallow* bank
8. Exit maneuver on entry heading

Airman Certification Standards:

- Altitude: +/- 100'
- Airspeed: +/- 10 Knots

Common Errors:

- Failure to clear the area, collision hazards
- Poor coordination
- Failure to maintain airspeed and altitude
- Failure to maintain constant radius across road

Rectangular Course (Private, CFI)

The objective of the Rectangular Course maneuver is to replicate wind correction in a traffic pattern. This maneuver is often done in an actual traffic pattern.

Procedure:

1. Pre-Maneuver Checklist
2. Select altitude between **600' - 1,000' AGL (recommend 1,200' MSL)**, in non-congested area
3. Determine wind direction for 45º downwind entry
4. Enter at **cruise speed (100 - 115 KIAS)**, bug reference heading
5. Crab into the wind on crosswind, and base legs of circuit
6. Exit maneuver on heading 45º opposite the downwind

Airman Certification Standards:

- Altitude: +/- 100'
- Airspeed: +/- 10 Knots

Common Errors:

- Failure to clear the area, collision hazards
- Poor coordination
- Failure to maintain airspeed and altitude
- Failure to maintain constant circuit around rectangular course due to improper wind correction

Eights-On Pylons (Commercial, CFI)

The objective of Eights-On Pylons is to develop intuitive control of the aircraft at a varying, low level altitude around two points on the ground. The main concept of this maneuver is to maintain the visual reference around the pylons, while maintaining pivotal altitude. Pivotal altitude varies throughout the maneuver as ground speed changes.

Procedure:

1. Pre-Maneuver Checklist
2. Determine pivotal altitude ($GS^2 \div 11.3$) + ground elevation.
3. Select two outside visual reference points (pylons) approximately half a mile, to a mile apart, ensure these pylons are perpendicular to the wind
4. Select outside visual reference point for entry heading, bug this heading
5. Enter at **cruise speed (100 - 115 KIAS)**, on a 45º to the downwind between the two pylons
6. Once abeam the pylon, begin turn
7. Make necessary altitude adjustments to maintain pivotal altitude *as it changes*
8. Briefly level wings, approximately 3-5 seconds, when aircraft is between the two pylons
9. Once aircraft is abeam second pylon, begin turn
10. Make necessary altitude adjustments to maintain pivotal altitude
11. Exit on entry heading

Airman Certification Standards:

- Bank Angle: Not to exceed 40º

Common Errors:

- Failure to clear the area, collision hazards
- Poor selection of visual reference points
- Failure to maintain adequate altitude control during the maneuver
- Failure to properly assess wind direction
- Poor coordination
- Failure to manipulate the controls in a smooth and continuous manner
- Failure to maintain orientation as the maneuver progresses

Performance Maneuvers

Steep Turns (All)

The objective of a Steep Turn is to develop a pilot's skill in flight control coordination and smoothness, awareness of outside reference points, and constant need to scan for hazards

Procedure:

1. Pre-Maneuver Checklist
2. Select altitude for task to be completed no lower than **1,500' AGL**
3. Select outside visual reference, bug reference heading
4. Enter at **cruise speed (100 - 115 KIAS)**
5. Establish a single 360º turn with a **45º** bank angle (**50º for Commercial Standards)**
6. Roll out smoothly on original heading
7. For Commercial standards, execute **TWO continuous** 360º turns, one in **each** direction with a smooth transition)

Airman Certification Standards:

- Altitude: +/- 100'
- Airspeed: +/- 10 Knots
- Heading: +/- 10º from Entry
- Bank Angle: +/- 5º

Common Errors:

- Failure to clear the area, collision hazards
- Inadequate pitch control
- Gain or loss of altitude
- Failure to maintain constant bank angle
- Poor coordination
- Premature rollout / Rollout after reference point
- Ineffective use of trim

Chandelles (Commercial, CFI)

The objective of a Chandelle is to complete a high performance, climbing 180º turn. The maneuver begins in level cruise flight and ends in a nose high altitude just above stall speed. This maneuver is divided into two 90º segments. The first 90º degree segment consists of a constant bank, varying pitch. The last 90º involves a constant pitch, and varying bank.

Procedure:

1. Pre-Maneuver Checklist
2. Select altitude for task to be completed no lower than **1,500' AGL**
3. Select 90º outside visual reference point, bug entry heading
4. Enter at **cruise speed (100 - 115 KIAS)**
5. Roll into 30º of bank
6. Smoothly Add Full Power
7. Hold bank constant and slowly increase pitch until to the 90º visual reference point
8. At the 90º reference point, hold constant pitch, while decreasing the bank.
9. Complete rollout at the 180° point, ±10° just above a stall airspeed, and maintaining that airspeed momentarily avoiding a stall.
10. Hold this airspeed for a few moments before returning to cruise flight
11. Lower nose and return to cruise without losing altitude

Airman Certification Standards:

- Bank Angle: 30º – first 90º of turn
- Airspeed: Just above stall speed
- Heading: +/- 10º at 180° point

Common Errors:

- Failure to clear the area, collision hazards
- Initial bank is too shallow resulting in a stall
- Initial bank is too steep resulting in failure to gain maximum performance
- Allowing the bank angle to increase after initial establishment
- Allowing the pitch attitude to increase as the bank is rolled out during the second 90º of turn
- Pitch attitude is too low resulting in airspeed well above stall speed
- Performing maneuver by reference to flight instruments rather than outside visual points
- Failure to maintain adequate altitude control during the maneuver
- Poor coordination, or Stalling at any point throughout the maneuver
- Not scanning for traffic throughout the maneuver
- Failure to maintain orientation as the maneuver progresses
- Rolling out of turn too early
- Ineffective use of trim

Lazy Eights (Commercial, CFI)

The objective of Lazy Eights is for the pilot to develop proper coordination of the flight controls over a wide range of airspeeds and altitudes. This is the only maneuver at which the control inputs are constantly changing.

Procedure:

1. Pre-Maneuver Checklist
2. Select altitude for task to be completed no lower than **1,500' AGL**
3. Select outside visual points (45º, 90º, and 135º), bug reference heading
4. Enter at **cruise speed (100 - 115 KIAS)**
5. Begin by slowly increasing pitch and bank
6. At the 45º point the aircraft should be at its maximum pitch up point, and 15º of bank
7. Continue increasing bank and lowering pitch to the 90º point. At the 90º point the aircraft should be at its maximum bank approximately 30º, with level pitch. The airspeed should be approximately just above stall speed
8. Slowly begin decreasing bank and lowering pitch to the 135º point. At the 135º point, the aircraft should be at the maximum pitch down and 15º bank
9. Slowly increase pitch and continue to decrease bank at a constant rate to bring the aircraft to the 180º point. The aircraft should be at the same altitude and airspeed at which the maneuver began
10. Repeat this procedure in the opposite direction, ending the maneuver at the initial entry heading, altitude, and airspeed. Use the same reference points. The initial 135º point will be the new 45º, the 90º degree point remains the 90º point, and the initial 45º is now the 135º point

Airman Certification Standards:

- Bank Angle: Approximately 30º at steepest point
- Altitude at 180° Point: +/- 100' from starting altitude
- Airspeed at 180° Point: +/- 10 Knots from starting airspeed
- Heading at 180° Point: +/- 10º from stating heading

Common Errors:

- Failure to clear the area, collision hazards
- Poor selection of visual reference points
- Failure to maintain adequate altitude control during the maneuver
- Maneuver is not symmetrical
- Poor coordination or stalling at any point throughout the maneuver
- Failure to manipulate the controls in a smooth and continuous manner
- Failure to maintain orientation as the maneuver progresses.

Steep Spiral (Commercial, CFI)

The objective of a Steep Spiral is to provide a flight maneuver for rapidly dissipating substantial amounts of altitude while remaining over a selected point on the ground. A steep spiral is a gliding turn effective for emergency descents or landings.

Procedure:

1. Pre-Maneuver Checklist
2. Select altitude for task to be completed no lower than **1,500' AGL** (recommend at least 4,300' MSL for three complete turns)
3. Select ground reference point, outside visual reference, and bug heading
4. Begin power reduction so you are in line with visual reference at **76 KIAS** (or airspeed otherwise indicated by examiner)
5. Power smoothly to idle upon entry
6. Pitch for **76 KIAS** (or specified airspeed), maintain airspeed throughout the maneuver
7. Roll into steep banked turn not to exceed **60º**, ***adjusting for wind***
8. Complete **three full turns** around reference point maintaining constant radius ***by adjusting bank***
9. Add full power for a moment on each upwind to clear engine
10. After three turns, exit maneuver on entry heading
11. Add power and return to cruise flight

Airman Certification Standards:

- Bank Angle: Not to exceed 60º at steepest point
- Airspeed: +/- 10 Knots
- Heading: +/- 10º on rollout
- Altitude – perform at least three (3) 360° turns completing maneuver no lower than 1500' AGL
- Maintain a constant radius about a suitable ground point

Common Errors:

- Failure to clear the area, collision hazards
- Performing maneuver by reference to flight instruments rather than outside visual points
- Failure to maintain adequate altitude control during the maneuver
- Stalling at any point throughout the maneuver
- Poor coordination
- Not scanning for traffic throughout the maneuver
- Failure to maintain orientation as the maneuver progresses
- Rolling out of turn too early
- Ineffective use of trim

Slow Flight and Stalls

Maneuvering During Slow Flight (All)

The objective of Slow Flight is to understand the flight characteristics and how the airplane's flight controls feel when operating in a near-stall condition.

Procedure:

1. Pre-Maneuver Checklist
2. Select altitude for task to be completed no lower than **1,500' AGL**
3. Select outside visual reference, bug reference heading
4. Reduce power*, maintain heading and altitude as the airplane slows.*
5. Flaps in smoothly to FULL when able
6. Maintain **55 - 60 KIAS**, power as necessary (or just above the stall warning horn)
7. **On recovery**, *simultaneously* reduce angle of attack, apply full power, retract flaps to **25º**
8. Upon establishing a positive climb, retract flaps to **10º**
9. **Upon** reaching approximately 76 KIAS retract flaps to **0º**
10. Return to starting altitude and cruise power

Airman Certification Standards:

- Altitude: +/- 100' (+/- 50' for Commercial)
- Airspeed: + 10, -0 Knots (+5, -0 Knots for Commercial)
- Heading: +/- 10º
- Bank Angle: +/- 10º (+/- 5º for Commercial)

Common Errors:

- Failure to clear the area, collision hazards
- Inadequate back pressure to maintain airspeed
- Excessive elevator resulting in climb
- Insufficient right rudder
- Inadequate power management to maintain altitude
- Failure to respond to stall warning

Power-Off Stall (All)

The objective of the Power-Off Stall maneuver is to simulate and recover from a stall on approach to land.

Procedure:

1. Pre-Maneuver Checklist
2. Select altitude for task to be completed no lower than **1,500' AGL**
3. Select outside visual reference, bug reference heading
4. Reduce power*, maintain heading and altitude as the airplane slows.*
5. Flaps in sequence to **FULL**
6. Descend at **65 KIAS** to simulate a descent to landing, then set power to idle.
7. Pitch up to **8º** to **12º** above the horizon simulating a flare. Hold this angle.
8. Once stall occurs, **recover** by *simultaneously* reducing angle of attack, adding **FULL POWER**, and retracting flaps to **25º**
9. Upon establishing a positive climb, retract flaps to **10º**
10. Upon reaching **76 KIAS,** retract flaps to **0º**
11. Return back to starting altitude and cruise power.

    For Commercial - *Pitch for* ***First Indication of Stall*** *(Imminent Stall - buffet or stall horn, whichever occurs first) UNLESS instructed by instructor/evaluator to induce full stall*

Airman Certification Standards:

- Heading: +/- 10º (if straight and level)
- Bank Angle: Not to exceed 20º +/-10 if in a turn (+/- 5 for Commercial)

Common Errors:

- Failure to clear the area, collision hazards
- Inability to recognize impending stall
- Poor coordination
- Failure to establish descent
- Inadvertent secondary stall
- Recovery prior to entering stalled condition

Power-On Stall (All)

The objective of a Power-On Stall is to practice recognizing, and recovering from a stall during climb, or go-around.

Procedure:

1. Pre-Maneuver Checklist
2. Select altitude for task to be completed no lower than **1,500' AGL**
3. Select outside visual reference, bug reference heading
4. Reduce power*, maintain heading and altitude as the airplane slows.*
5. Reaching **70 - 75 KIAS**, *simultaneously* increase pitch, and apply **Full Power**
6. Slowly increase pitch to **20º - 22º** above the horizon and hold this angle.
7. Upon reaching full stall condition, (first indication if Commercial), **recover** by reducing the angle of attack, then pitch for climb
8. Level off and return to cruise flight

Airman Certification Standards:

- Heading: +/- 10º (if straight and level)
- Bank Angle: Not to exceed 20º +/-10 if in a turn

Common Errors:

- Failure to clear the area, collision hazards
- Inability to recognize impending stall
- Poor coordination
- Inadvertent secondary stall
- Recovery prior to entering stalled condition.

Accelerated Stall (Commercial, CFI)

The objective of the accelerated stall maneuver is to demonstrate a stall at airspeeds greater than 1+G. Accelerated stalls are performed with 45º of bank, to demonstrate how bank angle and airspeed affect stall characteristics. Select entry altitude no lower than 3,000' AGL.

Procedure:

1. Pre-Maneuver Checklist
2. Select altitude for task to be completed no lower than **3,000' AGL**
3. Select outside visual reference, set heading bug
4. Slow to **90 KIAS** *maintaining heading and altitude*
5. Upon reaching 90 KIAS, bring power to idle, smoothly enter 45º bank turn
6. Apply backpressure and maintain altitude to induce stall
7. Pitch for first indication of stall (buffet or stall horn, whichever occurs first)
8. Once first indication is acknowledged, **recover** by *simultaneously* reducing angle of attack, adding
   FULL POWER, and leveling wings, return to entry heading or heading assigned by evaluator.
9. Cruise checklist

Airman Certification Standards:

- Heading: Return to heading as designated by evaluator
- Altitude: Return to altitude as designated by evaluator
- Airspeed: Return to airspeed as designated by evaluator
- Bank Angle: 45º coordinated

Common Errors:

- Failure to clear the area, collision hazards
- Inability to recognize impending stall
- Poor coordination
- Inadvertent secondary stall
- Recovery prior to entering stalled condition

Takeoffs and Landings

Go Around (All)

Utilize the Go-Around procedure if the landing environment is fowled or unsafe, a stabilized approach cannot be achieved, or the landing / touchdown is unsafe.

Procedure:

1. **FULL POWER, PITCH FOR CLIMB (8º above the horizon)**
2. Flaps retract to **25º**
3. Pitch for **Vy (76 KIAS)**
4. **Positive rate of climb and side step if necessary**, retract flaps to **10º**
5. Retract remaining flaps to **0º** and pitch for **Vy (76 KIAS)**
6. Announce to tower that you are going around
7. Fly normal pattern or amended pattern if instructed

Airman Certification Standards:

- Apply takeoff (Full) power immediately and transition to climb +10 Knots / -5 Knots (±5 Knots for Commercial)
- Maintain **Vy** to safe maneuvering altitude

Common Errors:

- Failure to add full power and pitch for a climb
- Failure to Retract flaps as required

Normal Takeoff (All)

The objective of a Normal Takeoff is to perform a takeoff under standard conditions.

Procedure:

1. Complete Before Take-off Checklist and Take-off Briefing
2. Once clearance is obtained to take-off, visually check final for traffic and verify Runway with a callout, “Runway ____ verified”
3. Line up on centerline and smoothly advance throttle to **FULL POWER**
4. Callout “airspeed alive”
5. Accelerate to V_R **60 KIAS**, apply backpressure, and allow the airplane to lift off.
6. Pitch for 7.5º-10º and climb out at **Vy (76 KIAS)**
7. Maintain coordination with right rudder
8. Maintain runway centerline using wind drift correction
9. At **1,000’ AGL**, perform Climb Checklist

Airman Certification Standards:

- Maintain V_Y**:** +10 Knots / -5 Knots to safe maneuvering altitude (+5/-5 for Commercial)

Common Errors:

- Failure to maintain runway centerline
- Failure to add adequate right rudder
- Rotating at too low or too high airspeeds
- Failure to adequately clear Final Approach

Normal Landing (All)

The objective of a Normal Landing is to maintain positive control of the airplane in normal configuration.

Procedure:

1. Perform the Before Landing Checklist before entering the pattern.
2. Enter downwind on a 45º angle at midfield
3. **Downwind**- reduce power and slow to around **100 KIAS**
4. ***Abeam touchdown point***: reduce power to **1,500 - 1,900 RPM**, check speed and extend flaps to **10º** slowing to approximately **90 KIAS**
5. **Base**- extend flaps to **25º** slowing to **80 KIAS**
6. **Final**- extend flaps to **40º,** slowing to **70 KIAS,** aiming for the runway numbers.
7. Flare so that the main tires touchdown first at near stalling speed, gently letting the nose down on the centerline
8. Align the longitudinal axis of the aircraft with the centerline using rudder correction
9. Use brakes as necessary

Airman Certification Standards:

- Maintain crosswind correction and directional control throughout approach and landing
- Touch down at proper pitch attitude
- Touch down within 400’ beyond, on a specified point (within 200’ for Commercial)
- Touch down with airplane’s longitudinal axis aligned with and over centerline

Common Errors:

- Failure to maintain stabilized approach
- Failure to apply wind correction
- Sideloading the aircraft
- Landing off centerline

Short Field Takeoff (All)

The objective of a Short Field Takeoff is to simulate taking off from a short runway, with obstacles.

Procedure:

1. Complete Before Take-off Checklist and Take-off Briefing
2. Once clearance is obtained to take-off, visually check final for traffic and verify Runway with a callout, “Runway ____ verified”
3. Use all available runway, line up on centerline, apply brakes firmly, and apply full power slowly
4. Verify engine in parameters
5. Release brakes and smoothly accelerate
6. Call out “airspeed alive” and “rotate” at appropriate times **Vr (55 KIAS**)
7. Climb out at **64 KIAS** with flaps **25º**
8. Once clear of 50 ft. obstacle and at a safe altitude, retract flaps to **10º**
9. Accelerate to **Vy (76 KIAS)** and retract flaps **slowly** to prevent sinking to **0º**
10. Maintain coordination with right rudder pressure
11. At **1,000’ AGL**, transition to cruise climb **87 KIAS** and perform climb checklist

Airman Certification Standards:

- Rotate and lift off at **Vx (64 Knots)** +10 Knots / -5 Knots (+/-5 Knots for Commercial)
- Maintain pitch attitude that will maintain **Vx** until obstacle is cleared by 50’
- After clearing obstacle maintain **Vy (76 Knots):** +10 Knots/ -5 Knots (until safe maneuvering altitude) (+/-5 Knots for Commercial)

Common Errors:

- Failure to adequately apply brakes
- Failure to utilize all available runway
- Rotating at too high or too low airspeeds
- Failure to maintain Vx until obstacle cleared
- Failure to maintain Vy during climb out

Short Field Landing (All)

The objective of a short field landing is to simulate landing on a short runway.

Procedure:

1. Perform the Before Landing Checklist before entering the pattern.
2. Enter downwind on a 45º angle at midfield
3. **Downwind**- reduce power and slow to around **100 KIAS**
4. ***Abeam touchdown point***: reduce power to **1,500 - 1,900 RPM**, check speed and extend flaps to **10º** slowing to approximately **90 KIAS**
5. **Base**- extend flaps to **25º** slowing to **80 KIAS**
6. **Final**- extend flaps to 4**0º,** slowing to **65 KIAS,** aiming for just short of the touchdown point.
7. Use power to adjust sink rate and pitch for airspeed. Once landing is assured, power to idle and touchdown at slowest possible airspeed
8. Carefully retract the flaps, use maximum braking without skidding the tires, yoke full aft for aerodynamic braking and maintain centerline and wind correction
9. Taxi clear of runway and perform “after landing” checklist

Airman Certification Standards:

- Land on designated touchdown point: +200’ / -0’. (+100/-0’ for Commercial)

Common Errors:

- Touching down prior to designated landing point
- Landing too far past the touch down point
- Failure to maintain runway centerline
- Sideloading the airplane
- Unstable approach
- Approach too flat (obstacle)

Soft Field Takeoff (All)

The objective of the Soft Field Takeoff procedure is to simulate taking off from an unimproved runway i.e. grass, dirt, or gravel runway. Pressure is held off the nose wheel to prevent the nose gear from sinking into an unimproved surface during takeoff roll. Ground effect is used to allow the aircraft to accelerate prior to climb.

Procedure:

1. Use aft yoke pressure during taxi. Complete Before Take-off Checklist and Take-off Briefing
2. Once clearance is obtained to take-off, visually check final for traffic and verify Runway with a callout, “Runway ____ verified”
3. Line up on centerline without stopping and smoothly advance throttle to **FULL POWER**
4. Use back pressure on the yoke to lift the weight off the nose gear. Once the nose wheel comes up, reduce aft pressure. Call out “airspeed alive”
5. Lift off at the lowest possible airspeed. Do not allow aircraft to settle back on to the runway
6. Maintain aircraft in ground effect (half wingspan from the surface) and accelerate to Vx **64 KIAS (for obstacle) or Vy 76 KIAS (for no obstacle)**
7. Once clear of obstacle, retract flaps to **10º** and accelerate to **Vy (76 KIAS)**
8. Establish positive rate of climb, retract flaps smoothly to **0º**
9. Maintain coordination with right rudder pressure
10. Maintain runway centerline using wind drift correction

Airman Certification Standards:

- Remain in ground effect while accelerating
- During climb to safe maneuvering altitude, maintain Vx or Vy : +10 Knots / -5 Knots (+/-5 Knots if Commercial)

Common Errors:

- Failure to remain in ground effect
- Climbing out at airspeed below Vx

Soft Field Landing (All)

The objective of a soft field landing is to simulate landing on a soft field. Care must be taken to keep the nosewheel off the ground for as long as possible during landing on an actual unimproved field, nose wheel may become lodged into the runway if too much weight is placed on the nose gear**.**

Procedure:

1. Perform the Before Landing Checklist before entering the pattern.
2. Enter downwind on a 45º angle at midfield
3. **Downwind**- reduce power and slow to around **100 KIAS**
4. ***Abeam touchdown point***: reduce power to **1,500 - 1,900 RPM**, check speed and extend flaps to **10º** slowing to approximately **90 KIAS**
5. **Base**- extend flaps to **25º** slowing to **80 KIAS**
6. **Final**- extend flaps to 4**0º,** slowing to **65 KIAS,**
7. Maintain **65 KIAS** on final and carry some power all the way down to touchdown
8. Land on the main wheels softly *within the first third of the runway* and hold the nose off the ground, continue to hold back pressure and slowly reduce power to idle
9. Use wind correction inputs and maintain centerline
10. Taxi clear of the runway with yoke full aft and perform the “after landing” checklist

Airman Certification Standards:

- Touch down at proper pitch attitude with minimum sink rate
- Touch down with no side drift
- Touch down with airplanes longitudinal axis aligned with runway centerline

Common Errors:

- Failure to hold nose off the ground during landing
- Landing too hard
- Failure to land with longitudinal axis aligned with centerline
- Unstable approach
- Approach too flat/shallow

Power Off 180º Accuracy Approach and Landing (Commercial, CFI)

The objective of a Power Off 180º accuracy approach is to land on a designated touchdown point on the runway, after a gliding, 180º turn from downwind, to final. Be sure to ask tower for permission to execute a "short approach" before beginning maneuver.

Procedure:

1. Perform the Before Landing Checklist and Select intended touchdown point
2. Bring power to idle when abeam touchdown point and pitch for best glide
3. Length of downwind is dependent on wind
4. Turn base and final to glide to touchdown point
5. Add flaps **if** and **as** necessary
6. Land on designated touchdown point
7. Taxi clear of runway and perform "after landing" checklist

Airman Certification Standards:

- Land on designated touchdown point: +200 / -0'

Common Errors:

- Touching down prior to designated landing point
- Landing too far past the touch down point
- Failure to maintain runway centerline
- Sideloading the airplane

Situational / Emergency Maneuvers

Forward Slip to Land

The objective of the Forward Slip to land, is to lose altitude in the instance of a high approach.

Procedure:

1. Perform appropriate landing approach procedures
2. To begin the slip**, Power- Idle**
3. Lower the upwind wing, pitch down and use opposite rudder to maintain centerline (same as crosswind correction)
4. The amount of altitude lost is controlled by the slip, i.e. amount of aileron and rudder deflection, as well as nose down attitude
5. Maintain an airspeed above **80 KIAS**
6. Once on proper glide path, re-establish normal approach and landing. Transition to **70 KIAS** on short final, flaps as needed
7. After exiting runway perform “after landing” checklist

Lost Procedures

Lost procedures are practiced preparing pilot for the possibility of becoming unaware of their location. These are the basic procedures but could vary in sequence due to airspace or terrain.

Procedure:

1. **CLIMB**- better view, and better navigation reception
2. **CIRCLE**- remain in general vicinity, this is important, so you do not become more lost, or fly into airspace, terrain, or weather
3. Use Garmin nearest airport feature.
4. Use two different VOR’s to triangulate your position
5. **CONFESS**- Confess to yourself that you are lost and that you cannot help yourself and need help; write down time determined lost
6. **CONSERVE-** lean mixture for best economy operation and reduce power to max endurance; check fuel state and determine how much time you have
7. **COMMUNICATE-** request assistance on any working frequency; PAN-PAN; Set 7700
8. **COMPLY-** Follow ATC instructions

Diversion

The diversion procedure is practiced so that the pilot is aware of the tasks required to divert to another airport in the case of emergency, weather, or maintenance.

Procedure:

1. Recognize a situation that requires a diversion
2. Write down time and identify current location on chart
3. Turn to estimated heading, avoiding any obstacles or airspace
4. Determine exact heading and turn on course
5. Determine Distance
6. Determine Groundspeed
7. Determine Time Enroute ETA
8. Determine Fuel required

Emergency Descent

An emergency descent is practiced simulating emergency situations that require a rapid descent. Two scenarios are often used during check rides. One scenario is that of a hypoxic passenger. Another is the simulation of an engine/wing fire.

Procedure:

Procedure:

1. Pre-Maneuver checklist complete
2. ENSURE AREA BELOW IS CLEAR
3. Select an appropriate landing area (if appropriate for the scenario)
4. Mixture – Forward
5. Throttle – Idle
6. Pitch for 120 KIAS
7. Turn left between 30° and 45° so pilot can maintain visibility below
8. Continue to engine out / emergency landing checklist (as appropriate for scenario given)
9. Level off at desired altitude

Emergency Approach and Landing (Simulated)

Emergency approach and landing procedure is typically conducted as a simulated engine failure.

Procedure:

1. **A** - Pitch for BEST GLIDE **AIRSPEED** – **Vg (76 KIAS)**
2. **B** - Select **BEST** PLACE TO LAND look for flat fields, freeways, private airports
3. **C** - Conduct EMERGENCY LANDING **CHECKLIST**
4. **D** – Declare Emergency “Mayday, Mayday, Mayday” on 121.5 and squawk 7700

Recovery from Unusual Attitudes

This procedure is practiced so that the pilot knows how to respond to unusual attitudes in instrument flight. These procedures have been established to quickly, and safely return the aircraft to straight and level flight, while minimizing a potential stall, or stress to the aircraft.

Procedure:

1. Pre-Maneuver checklist complete

Nose High / Airspeed slowing

1. Full throttle
2. Allow the nose to fall to the horizon
3. Roll wings level

Nose Low / Airspeed accelerating

1. Throttle idle
2. Wings level
3. Pitch for level flight

Airman Certification Standards:

- Recognize the unusual flight attitudes
- Perform the correct flight control configuration / inputs

Common Errors:

- Failure to interpret flight instruments
- Failure to recover in the proper configuration or sequence

Instrument Procedures

Loss of Communications (Instrument)

This procedure is practiced so that the pilot can effectively manage a simulated loss of communication scenario, demonstrating proficiency in recognition, communication re-establishment, decision-making regarding flight continuation or deviation, and appropriate timing for initiating an approach.

Procedure:

1. Recognition and Communication Re-Establishment:
    - Immediately squawk 7600 on the transponder to indicate a loss of communication to ATC.
    - Simulate appropriate actions to re-establish communication, including radio frequency checks, equipment checks, and attempts to contact ATC via alternate means (if available).
    - Determine whether to continue to the flight plan destination or deviate based on the circumstances, terrain, weather, and available navigational aids.
    - Assess the appropriate time to initiate an approach considering factors such as distance, fuel reserves, weather conditions, and terrain clearance.
    - Utilize single-pilot resource management (SRM) or crew resource management (CRM) principles as applicable to ensure effective decision-making and workload management.
2. Determination of Route and Altitude Precedence (in IFR):
    - ***Route to Fly:***
        1. **Assigned:** Follow the route specified in the last clearance received from ATC.
        2. **Vectored:** Proceed direct to the fix specified in any vector clearance received from ATC.
        3. **Expected:** Fly as advised in any further clearance provided by ATC.
        4. **Filed:** Follow the route specified in your filed flight plan.
    - ***Altitude (Highest of the following):***
        1. **Minimum:** Maintain the altitude prescribed for IFR operations.
        2. **Expected:** Ascend or descend as advised in any further clearance provided by ATC.
        3. **Assigned:** Maintain the altitude specified in your last ATC clearance.

Airman Certification Standards:

- Demonstrates the ability to recognize a simulated loss of communication promptly.
- Simulates actions to re-establish communication effectively.
- Determines whether to continue to the flight plan destination or deviate based on comprehensive risk assessment and situational awareness.
- Determines the appropriate time to begin an approach considering various factors influencing flight safety and operational requirements.
- Employs single-pilot resource management (SRM) or crew resource management (CRM) techniques as appropriate to enhance decision-making and operational efficiency.

Common Errors:

- Failure to adhere to the proper route and altitude precedence as outlined by ATC procedures.
- Failure to squawk 7600 to indicate a loss of communication with ATC.
- Inadequate preparation or simulation of actions to re-establish communication with ATC.
- Lack of comprehensive risk assessment and decision-making regarding flight continuation or deviation.
- Failure to initiate an approach at the appropriate time, leading to inefficiencies or compromised safety.

Intercepting and Tracking VOR, GPS Courses, and DME Arcs (Instrument)

The objective of Intercepting and Tracking VOR, GPS Courses, and DME Arcs is to develop proficiency and accuracy in navigating using VOR and GPS guidance systems, and to efficiently execute DME arcs, maintaining compliance with instrument flying standards.

Procedure:

1. Pre-Maneuver Checklist **Set Navigation Source:**

    a. **For VOR Course and DME Arcs (Tune VOR):**

        i. Insert the VOR frequency into the desired NAV receiver (NAV 1, NAV 2).
        ii. Identify the VOR to ensure it is functioning correctly.
        iii. **Additional for DME Arcs:** Ensure that the DME is functioning and correctly displaying distance to the VOR.

    b. **For GPS Course:**

        i. Load the desired course into the GPS system.
        ii. Verify the course details on the GPS to ensure they are correctly programmed and that the system is ready for navigation.

2. **Set and Verify Course:**

    a. **For VOR/GPS Courses:** Set the OBS to the desired course and determine the current radial or track.
    b. **For DME Arcs:** Set the OBS and prepare to track the course leading to the arc initiation point.

3. **Determine and Execute Intercept Angle:**

    a. If the intercept angle is less than 20°, turn 20° towards the desired course.
    b. If the intercept angle is more than 90°, turn 90°.
    c. If the intercept angle is between 20° and 90°, turn double the angular difference.
    d. **For DME Arcs:** Begin turning towards the arc 0.5 NM before reaching the arc distance, usually 90° towards the arc.

4. **Intercept and Track the Course:**

    a. **For VOR/GPS:**

        i. Turn to intercept and as the CDI centers, align with the course heading.
        ii. Maintain course adjustments to keep the CDI centered.

    b. **For DME Arcs:**

        i. Once aligned with the arc, adjust the OBS forward by 10° increments, correcting for wind to maintain the arc distance ±1 NM.
        ii. Prior to reaching the desired radial, turn to intercept the inbound course.

Airman Certification Standards:

- **Altitude:** Maintain within ±100 feet.
- **Airspeed:** Maintain within ±10 knots.
- **Heading:** ±10º from the selected heading (en route), ±5º (arrival or DME arc).
- **Bearing:** Within ¾ scale deflection of the CDI (for VOR/GPS).
- **Distance from Arc:** Maintain within ±1 NM (for DME arcs).

Common Errors:

- Failure to correctly identify the navigation station or input the desired course.
- Overshooting or undershooting the intended radial, course, or DME arc.
- Misinterpreting navigational data or station passage, particularly with VOR.
- Chasing the CDI, which can result in homing rather than tracking.
- Losing situational awareness, especially during DME arc navigation.
- Starting the arc too early or too late, resulting in deviation from the intended arc distance.

Holding (Instrument)

The objective of Holding is to effectively manage holding procedures in air traffic control separations, weather diversions, and procedural turns, demonstrating proficiency in direct, parallel, and teardrop entry methods according to Instrument Flight Rules (IFR) and regulatory standards.

Procedure:

1. **Preparation:**

   a. Tune and identify the navigational system for the hold, if required. Twist OBS to the TO indication for that navigation system to prepare to identify and cross the fix initially.
   b. Consider reducing airspeed to an appropriate holding airspeed to conserve fuel in anticipation of the Expect Further Clearance (EFC) time, starting 2 miles prior to the holding fix.

2. **Entry Into Hold:**

   a. ***Direct Entry:*** Upon crossing the fix, turn immediately to the outbound heading using a standard rate turn.
   b. ***Parallel Entry:*** Upon crossing the fix, turn to parallel the outbound course on the reciprocal of the inbound course for one minute.
   c. ***Teardrop Entry:*** Upon crossing the fix, turn 30° outbound on the holding side for one minute.
   Report altitude and time at holding fix

3. **Manage OBS Settings:**

   a. Initially, fly heading bug to wind corrected track outbound (if appropriate to entry) to cross the holding fix.
   b. Twist OBS to the TO indication to prepare for the inbound course.
   c. After completing the outbound leg, intercept OBS to the TO indication for the inbound course.

4. **Timing and Turns:**

   a. Start timing once wings are level or when the fix is abeam (for VOR holds), whichever occurs later.
   b. Fly the outbound leg for one minute. (unless otherwise specified)
   c. Turn inbound using a standard rate turn, and start timing again once wings are level.

5. **Tracking Inbound and Outbound Legs:**

   a. Track the inbound course to the holding fix.
   b. Upon reaching or crossing the holding fix, prepare to execute the next outbound leg or continue as required.

Airman Certification Standards:

- **Altitude:** Maintain within ±100 feet.
- **Airspeed:** Maintain within ±10 knots.
- **Heading:** ±10º from the selected heading
- **Bearing:** Within ¾ scale deflection of the CDI

Common Errors:

- Failure to properly identify the holding fix or VOR station.
- Overshooting or undershooting radials.
- Misinterpreting station passage.
- Inadequate wind correction, leading to deviation from the intended flight path.
- Not adjusting airspeed appropriately for fuel conservation in anticipation of EFC.
- Neglecting to recalculate fuel reserves following an unanticipated EFC assignment.
- Chasing the CDI, leading to "homing" instead of precise tracking.
- Failure to maintain within ¾ scale deflection of the CDI.

Missed Approach (Instrument)

The objective of a Missed Approach is to execute the missed approach procedure promptly and proficiently in compliance with the current Airman Certification Standards (ACS), ensuring safety and adherence to regulatory guidelines.

Procedure:

1. Promptly Initiate Missed Approach:
    - Immediately apply full power and smoothly initiate a climb upon determining that required visual references for a safe landing are not attainable.
2. Aircraft Configuration and Performance:
    - Adjust flaps to 0° when a positive rate of climb is established to optimize climb performance and reduce drag.
    - Execute the climb checklist to ensure all necessary items are accomplished for the missed approach scenario.
3. Climb and Navigation:
    - Report the initiation of the missed approach procedure to ATC to maintain situational awareness and facilitate appropriate coordination.
    - Climb to the published altitude if executing a published missed approach procedure, ensuring compliance with altitude restrictions.
    - If conducting a practice approach, climb to the assigned altitude as directed by ATC or the evaluator.
    - Follow the published missed approach course if executing a published missed approach procedure, maintaining course integrity and adherence to lateral navigation guidance.
    - If conducting a practice approach, fly the assigned heading provided by ATC or the evaluator while maintaining situational awareness.

Airman Certification Standards:

- **Altitude:** Maintain altitude within ±100 feet tolerance to ensure compliance with altitude restrictions and maintain vertical separation from other aircraft.
- **Airspeed:** Maintain airspeed within ±10 knots of the recommended speed to ensure adequate climb performance and flight stability during the missed approach.
- **Heading, Course, or Bearing:** Maintain heading, course, or bearing within ±10º to adhere to lateral navigation requirements and ensure accurate tracking along the designated missed approach path.

Common Errors:

- Failure to promptly advise ATC of missed approach intentions, potentially leading to confusion or loss of situational awareness.
- Neglecting to accomplish essential checklist items, compromising aircraft configuration and performance during the missed approach.
- Deviation from published or instructed missed approach procedures, increasing the risk of navigational errors or airspace conflicts.

Non-Precision Instrument Approach (Instrument)

The objective of Non-Precision Instrument Approach is to proficiently execute non-precision approaches using VOR/DME, Localizer, and GPS systems, ensuring compliance with all regulatory and operational guidelines.

Procedure:

1. Pre-Approach Preparation (prior to IAF crossing or final intercept vector):
    - Load the approach procedure into the Flight Management System (FMS) as time and workload allows.
    - Conduct the Instrument Approach Checklist.
    - Comply with ATC assigned altitudes until cleared for the approach.
    - Tune and identify VOR and or Localizer frequencies prior to being cleared for the approach
2. Approach Initiation:
    - Once cleared for the approach, activate the approach in the FMS, comply with published step-down altitudes, and procedure turns (if needed)
    - When established on approach (CDI begins to center), announce “positive course guidance” (VOR/GPS) or “localizer alive” (Localizer).
3. Final Approach:
    - ½ NM prior to the FAF, reduce speed to final approach speed for aircraft **90 KIAS**, ensure approach speed (V_{FE} = 102 KIAS) to add 10° of flaps.
    - Cross the FAF at the published altitude.
    - Begin a stabilized descent with the CDI centered after crossing the Final Approach Fix (FAF).
    - Cross any intermediate step-down fixes at the published altitude.
    - If you have the runway environment in sight at a Visual Descent Point (VDP) (if applicable), begin a normal descent to the runway. This descent should be executed in a manner that allows for a stabilized landing approach. If you do not have sufficient visual reference by the VDP, you should not descend below MDA.
    - Maintain a stabilized descent until reaching the Minimum Descent Altitude (MDA).
    - Perform altitude callouts at 1,000', 500', 100', and at minimums.
4. Landing or Missed Approach Decision:
    - If the required visual references are in sight, continue descent to land and slow to an airspeed that allows for a stabilized landing.
    - If the runway environment is not in sight, maintain MDA until the Missed Approach Point (MAP).
    - At the MAP, if still not visual, initiate the missed approach procedure and do not descend below MDA.

System-Specific Considerations:

- VOR/DME Approach: Utilize lateral course guidance provided by the VOR/DME. Altitude step-down fixes are identified using radials and DME distances.
- Localizer Approach: This is used when the glideslope of an ILS is inoperative, turning it into a non-precision approach using only the localizer for lateral guidance.
- GPS Approach: Follow GPS guidance using LP or LNAV minimums. Announce "positive course guidance" upon approach activation, noting that there will be no vertical guidance provided.

Airman Certification Standards:

- Prior to Beginning Final Approach Segment:
    - **Altitude:** +/- 100 feet
    - **Airspeed:** +/- 10 knots
    - **Heading:** +/- 10º from selected heading

- Final Approach Segment:
    - **Altitude:** Above MDA, +100/-0 feet to the VDP or the MAP
    - **Airspeed:** +/- 10 knots
    - **Bearing:** Within ¾ scale deflection of the CDI

Common Errors:

- Failure to identify the navigation aid (VOR, localizer, or GPS waypoint).
- Failure to properly configure the aircraft for the approach.
- Not activating the approach mode on the navigation system.
- Descending below published step-down altitudes.
- Failure to maintain airspeed.
- Exceeding ¾ scale deflection of the CDI.

Precision Instrument Approach (Instrument)

The objective of Precision Instrument Approach is to proficiently execute precision approaches using Instrument Landing System (ILS) and GPS-based systems, ensuring compliance with all regulatory and operational guidelines.

Procedure:

1. **Pre-Approach Preparation (prior to IAF crossing or final intercept vector):**
   - Load the approach procedure into the Flight Management System (FMS).
   - Conduct the Instrument Approach Checklist.
   - Comply with ATC assigned altitudes until cleared for the approach.
   - Select, tune, identify, and confirm the operational status of Localizer/VOR frequencies prior to being cleared for the approach.
2. **Approach Initiation:**
   - Once cleared for the approach, comply with published altitudes and activate the approach.
   - When established on approach (CDI begins to center), announce “positive course guidance” (GPS) or “localizer alive” (ILS).
3. **Final Approach:**
   - Announce “Glideslope Alive” when glideslope becomes active and begins moving to center.
   - ½ dot below glideslope intercept, reduce speed to final approach speed **90 KIAS**, ensure approach speed (V_{FE} = 102 KIAS) to **add 10° of flaps**.
   - Cross the FAF at the published altitude.
   - Begin a stabilized descent with the CDI centered after crossing the FAF.
   - Follow the glide slope and CDI to maintain precise lateral and vertical guidance.
   - Perform altitude callouts at 1,000', 500', 100', and at minimums.
4. **Landing or Missed Approach Decision:**
   - If required visual references are in sight at the Decision Altitude (DA)/Decision Height (DH), continue descent to land and slow to an airspeed that allows for a stabilized landing.
   - If required visual references are not in sight at DA/DH, conduct missed approach procedure.
5. **System-Specific Considerations:**
   - **ILS Approach:** Utilize both vertical and lateral guidance provided by the ILS system. Ensure all components such as localizer and necessary VOR systems (if applicable) are identified and active.
   - **GPS Approach:** Follow GPS guidance, typically using LPV or LNAV/VNAV minimums, ensuring "positive course guidance" is announced upon course acquisition.

Airman Certification Standards:

- ***Prior to Beginning Final Approach Segment:***
  - **Altitude:** +/- 100 feet
  - **Airspeed:** +/- 10 knots
  - **Heading:** +/- 10º from the selected heading
- ***Final Approach Segment:***
  - **Altitude:** Maintain a stabilized final approach from FAF to DA/DH
  - **Airspeed:** +/- 10 knots
  - **Bearing:** Within ¾ scale deflection of the CDI

Common Errors:

- Failure to identify the localizer or GPS station.
- Failure to properly configure the aircraft for the approach.
- Not activating the approach mode on the navigation system.
- Descending below the published altitude at the FAF.
- Failure to maintain the required airspeed.
- Exceeding ¾ scale deflection of the CDI.

Circling Approach (Instrument)

The objective of a Circling Approach is to execute a circle to land maneuver proficiently following the completion of an instrument approach, adhering to the specific operational guidelines and safety standards as outlined by the current Airman Certification Standards (ACS).

Procedure:

1. **Complete Instrument Approach:**
    - Successfully execute the designated instrument approach procedure as per the approach chart and ATC instructions.
2. **Approach Initiation:**
    - Once cleared for the approach, comply with published altitudes and activate the approach.
    - When established on approach (CDI begins to center), announce “positive course guidance” (GPS) or “localizer alive” (ILS).
3. **Final Approach:**
    - Announce “Glideslope Alive” when glideslope becomes active and begins moving to center.
    - ½ NM prior to the Final Approach Fix (FAF) (non-precision approach) OR ½ dot below glideslope intercept (precision approach), reduce speed to final approach speed **90 KIAS**, ensure approach speed (V_{FE} = 102 KIAS) to **add 10° of flaps**.
    - Cross the FAF at the published altitude.
    - Begin a stabilized descent with the CDI centered after crossing the Final Approach Fix (FAF).
    - Cross any intermediate step-down fixes at the published altitude.
4. **Circling Radius:**
    - **Category A Aircraft (Warrior, Archer, Arrow):** Maintain 80-90 KIAS to hold circling radius of approximately 1.3 NM from the runway threshold, ensuring optimal visibility by maintaining MDA and maneuverability.
5. **Circling Maneuver Initiation:**
    - Maintain circling minimums until a safe position to commence an approach to land is established. Do not descend below circling minimums if in actual instrument conditions.
    - Once landing is assured, confirm approach speed to add any additional flaps, if necessary.
6. **Landing Preparation:**
    - Maneuver to a base or downwind leg appropriate for the landing runway considering wind and other environmental conditions. Begin a stabilized descent without exceeding a 30° bank angle.
    - Aim to touch down within the first one-third of the runway, ensuring the approach and landing are conducted without excessive maneuvering that could exceed the normal operating limits of the airplane.
7. **Visual Reference and Missed Approach:**
    - Maintain continuous visual contact with the runway or identifiable parts of the airport. If visual contact is lost at any time, immediately initiate a missed approach procedure.

Airman Certification Standards:

- **Altitude:** Maintain +100/-0 feet until descending below the MDA or the preselected circling altitude above the MDA.
- **Bank Angle:** Do not exceed 30° of bank during the circling maneuver to ensure safety and control.
- **Airspeed:** Maintain airspeed ±10 knots,
- **Heading/Track:** Desired heading/track ±10°

Common Errors:

- **Circling too close/far out from the airport:** Maintain the recommended circling radius to ensure adequate visual contact and compliance with circling minimums.
- **Descending below Minimum Descent Altitude (MDA):** Maintain MDA until you are in a position to safely descend for landing.
- **Excessive maneuvering on final approach:** Ensure the approach to landing is stable, with minimal heading changes and bank angles not exceeding the prescribed limits.

Instructor Demonstration Maneuvers

Demonstration of Flight Characteristics at Various Configurations and Airspeeds (CFI Only)

The objective of this maneuver is to determine the applicant understands flight characteristics and power required at different airspeeds and configurations appropriate to the make and model of airplane flown, can apply that knowledge, manage associated risks, demonstrate appropriate skills, and provide effective instruction.

Clean Configuration Demonstration Procedure:

1. Pre-Maneuver Checklist
2. Select altitude for task to be completed no lower than **1,500' AGL**
3. Select outside visual reference, bug reference heading
4. Reduce power, maintain heading and altitude as the airplane slows to **76** KIAS (or speed specified by instructor/evaluator). Note power setting required to perform this.
5. Continue to slow the airplane to, and maintain, an airspeed at which any further increase in angle of attack, increase in load factor, or reduction in power would result in an immediate stall, and maintain that airspeed in level flight, noting the airspeed and power setting required, while;
6. Verbally acknowledging stall warning indications, then;
7. Without changing power setting, lower the pitch attitude and accelerate to a faster airspeed until reestablishing the airplane in level flight, noting the new airspeed and amount of altitude lost, then;
8. Return to normal cruise flight at the altitude and heading specified by the instructor/evaluator.

Landing Configuration Demonstration Procedure:

1. Pre-Maneuver Checklist
2. Select altitude for task to be completed no lower than **1,500' AGL**
3. Select outside visual reference, bug reference heading
4. Reduce power, maintain heading and altitude as the airplane slows
5. Check speed **Flaps** in smoothly to **FULL** when able
6. Reduce power, maintain heading and altitude as the airplane slows to **65** KIAS (or speed specified by instructor/evaluator). Note power setting required to perform this.
7. Continue to slow the airplane to, and maintain, an airspeed at which any further increase in angle of attack, increase in load factor, or reduction in power would result in an immediate stall, and maintain that airspeed in level flight, noting the airspeed and power setting required, while;
8. Verbally acknowledging stall warning indications, then;
9. Without changing power setting, lower the pitch attitude and accelerate to a faster airspeed until reestablishing the airplane in in level flight, noting the new airspeed and amount of altitude lost, then;
10. On recovery, full power, retract flaps to 25º immediately.
11. Establish a positive climb rate, then;
12. Maintain a climb rate and retract the remaining flaps sequentially.
13. Maintain altitude and heading throughout the recovery.
14. Return to normal cruise flight at the altitude and heading specified by the instructor/evaluator.

Airman Certification Standards:

- Altitude: +/- 100'
- Airspeed: + 5, -0 Knots
- Heading: +/- 10º
- Bank Angle: +/- 5º

Common Errors:

- Failure to clear the area, collision hazards
- Maneuvering at critically slow airspeeds
- Exceeding airspeed limitations
- Flight characteristics in the region of reversed command and the potential for loss of control.
- Inadvertent exceedance of the critical angle of attack.
- Range, limitations, and operational characteristics of airspeed indicators and stall warning indicators
- Unacknowledged stall warning indications

Cross-Controlled Stall Demonstration (CFI Only)

The objective of a cross controlled stall demonstration is to show the student how an improper cross control /uncoordinated turn on a simulated base-to-final turn could result in a stall.

Procedure:

1. Pre-Maneuver Checklist
2. Select altitude for task to be completed no lower than **3,000' AGL**
3. Select outside visual reference, bug reference heading.
4. Slow the airplane.
5. Check speed, extend flaps to **25º,** establish **76 KIAS**, trim airplane.
6. Close throttle.
7. Begin a **30º** bank to the left, simulating a descending base leg.
8. Apply excessive rudder in the direction of the turn (bottom rudder) while holding bank constant with opposite aileron input and add elevator pressure to keep the nose from lowering.
9. Acknowledge the cues at the first indication of a stall (e.g., aircraft buffet, stall horn, etc.).
10. Recover at the first indication of a stall or after a full stall has occurred, as specified by the instructor/ evaluator. Recover by decreasing angle of attack and level the wings.
11. Regain coordinated flight, **Full Power**.
12. Establish a positive climb rate, retract flaps to **10º**
13. Maintain a climb rate and retract the remaining flaps.
14. Time permitting, describe and demonstrate conditions that lead to a cross-controlled stall for future avoidance.
15. Maintain altitude and heading throughout the recovery.
16. Return to normal cruise flight at the altitude and heading specified by the instructor/evaluator.

Airman Certification Standards:

- Exhibits instructional knowledge

Common Errors:

- Failure to clear the area, collision hazards
- Failure to establish correct configuration
- Improper demonstration of recovery
- Failure to establish a cross-controlled turn and stall condition that will adequately demonstrate the hazards of a cross controlled stall.

Elevator Trim Stall (CFI Only)

The objective of an elevator trim stall demonstration is to show the student how a sudden change in speed or thrust could result in a trim setting that will cause a stall.

Procedure:

1. Pre-Maneuver Checklist
2. Select altitude for task to be completed no lower than **3,000' AGL**
3. Select outside visual reference, bug reference heading
4. Slow the airplane to **65 KIAS** and extend flaps to **40º** simulating a descent to final.
5. Trim the airplane
6. Smoothly apply full power and allow the pitch attitude to increase in excess of normal climb.
7. Acknowledge the cues at the first indication of a stall (e.g., aircraft buffet, stall horn, etc.).
8. Recover at first indication by decreasing angle of attack, and level the wings. Apply nose down trim as necessary and retract the flaps to **25º** immediately
9. Return to starting altitude, speed, and **0º** flaps

Airman Certification Standards:

- Exhibits instructional knowledge

Common Errors:

- Failure to clear the area, collision hazards
- Failure to establish correct configuration
- Improper demonstration of recovery
- Failure to establish an elevator stall condition that will adequately demonstrate the hazards of an elevator trim stall.

Secondary Stall (CFI Only)

The objective of secondary stall demonstration is to show the student how an improper stall recovery can lead to remaining stalled.

Procedure:

1. Pre-Maneuver Checklist
2. Select altitude for task to be completed no lower than **3,000' AGL**
3. Select outside visual reference, bug reference heading
4. Slow the airplane to **65 KIAS** and extend flaps to **40º**
5. Execute a Power-off stall.
6. As the airplane stalls, DO NOT release the backpressure and add full power.
7. Note how the airplane pitches up and buffets a second time.
8. Reduce the angle of attack and recovery normally as a Power-off Stall.
9. Time permitting, describe and demonstrate conditions that lead to a secondary stall for future avoidance.

Airman Certification Standards:

- Exhibits instructional knowledge

Common Errors:

- Failure to clear the area, collision hazards
- Failure to establish correct configuration
- Improper demonstration of recovery
- Failure to establish a secondary stall condition that will adequately demonstrate the hazards of not reducing the angle of attack during a stall