SHANNON SCHOOL
OF AERONAUTICS

WHEN CLEARED ONTO RUNWAY FOR TAKEOFF

- 1. Landing and strobe lights on.
- 2. Transponder - verify code.
- 3. Mixture full rich.
- 4. Check traffic clear.

NORMAL TAKEOFF & CLIMB

- 1. Flaps to 0º.
- 2. Ailerons into the wind and elevator 1” back from the gust lock hole.
- 3. Smoothly apply full power.
- 4. Check for at least 2250 RPM
- **Power Set
- **Oil temperature and pressure in the green
- **Engine Instruments in the Green**
- When airspeed increases
- **Airspeed Alive**
- 5. Maintain runway centerline with rudder (mostly right).
- 6. Slowly decrease aileron deflection as the aircraft accelerates.
- 7. At 55 KIAS apply back pressure and allow aircraft to fly off the ground. Raise the top edge of the cowling onto the horizon.
- 8. Establish wind correction angle to stay over the runway.
- 9. Keep the top of the cowling on the horizon and the wings level.
- Clear of obstacles, lower nose slightly to climb at 80 KIAS.- 10. Above 400' AGL, perform After Takeoff checklist.

CLIMB

- Enrich / Pitch / Power / Trim
- 1. Enrich mixture as required.
- 2. Pitch to raise the top edge of the cowling onto the horizon.
- 3. Simultaneously apply full power if over 200' climb.
- 4. Trim nose up if more than a 1000’ climb.
- 5. Climb speed: 80 KIAS LEVEL OFF FROM CLIMB
- Pitch / Power / Trim

- 1. 50’ before reaching desired altitude, reduce pitch to level attitude (top of magcompass on horizon).
- 2. Hold pitch to the horizon. At 100 KIAS reduce power to 2400 RPMs.
- 3. Trim as required.
- 4. Perform Cruise checklist.

DESCENT

- 1. Reduce power to 2100 RPM.
- 2. Allow the pitch attitude to lower and stabilize (mag-compass below the horizon).
- 3. Adjust pitch for about 500’ per min. descent.
- 4. 50’ above desired altitude, increase power to 2400 RPM and maintain new altitude. LEVEL TURN
- 1. Bug/Note new heading.
- 2. While watching pitch, simultaneously apply rudder pressure in the direction of the turn, and lift wing in direction of the turn. Clear under the wing.
- 3. Hold rudder pressure in the direction of turn and smoothly roll into the turn with aileron.
- 4. Watch pitch attitude during roll in, and throughout turn.
- 5. As aircraft banks, apply slight elevator back pressure to hold altitude.
- 6. When proper bank angle is established – neutralize ailerons to maintain bank.
- - 7. 5° (edge of heading bug) before the desired heading, apply rudder and aileron in the direction of roll-out, while reducing elevator backpressure.

PRE-MANEUVER CHECKS

- 1. Clearing turns
- 2. Reference point – outside and note heading
- 3. Altitude & Airspeed
- 4. Configure
    - o 1.Fuel selector - BOTH.
    - o 2. Mixture RICH.
    - o 3. Exterior Lights - ON.
    - o 4. Check seatbelts on

STEEP TURNS

- No Lower Than 1500' AGL
- 1. Ask passengers to help look for traffic.
- 2. CRAC Pre-Maneuver Checks.
- 3. Entry speed 90 KIAS (approx. 2100 RPM).
- 4. Roll smoothly into 45° bank, while increasing power by 200 RPMs, then dial in 2 full turns of nose up trim.
- 5. Maintain altitude in the turn primarily with pitch. Bank when needed.
- 6. 20° before the entry heading, begin a smooth rollout to entry heading with rudder and ailerons.
- 7. As rolling out, dial 2 turns of nose down trim and reduce power to 2100 RPM.

SLOW FLIGHT

- No Lower Than 1500' AGL
- 1. Ask passengers to help look for traffic.
- 2. CRAC Pre-Maneuver Checks.
- 3. Carb Head: ON
- 4. Reduce power to 1500 RPM, hold heading with slight rudder (left).
- 5. Hold altitude and trim about 3 slow turns of nose up trim while decelerating.
- 6. At 70 KIAS, increase power to 1800 RPM, adjust pitch trim for 65 KIAS.-
- **7. Power controls altitude, Pitch controls airspeed.
- ** - 8. Bug heading 60° to the right.
- 9. Maintain altitude while making shallow turn (~15° bank).
- 10. At edge of heading bug, rollout. Airspeed "White Arc" - flaps to 10°, 1 turn nose down trim, pitch for 60 KIAS.
- 11. Bug heading 60° to the right.
- 12. Maintain altitude while making shallow turn (~15° bank).
- 13. At edge of heading bug, rollout. Airspeed "White Arc" - flaps to 20°, 1 turn nose down trim, pitch for 55 KIAS.
- 14. Bug heading 60° to the right.
- 15. Maintain altitude while making shallow turn (~15° bank).
- 16. At the edge of heading bug, rollout. Airspeed "White Arc" - flaps to 30°, 1 turn nose down trim, pitch for 50 KIAS.
- 17. Bug heading 60° to the right.
- 18. At the edge of heading bug, rollout.

SLOW FLIGHT TO CRUISE

- 1. Carb Heat: OFF
- 2. Smoothly add full power, right rudder, and forward elevator pressure to hold altitude and heading.
- 3. Retract flaps to 20°
- 4. Wait three seconds
- 5. Flaps to 10°
- 6. Above 70 KIAS
- 7. Flaps Up
- 8. Above 100 KIAS reduce power to 2400 RPM and trim.

POWER OFF STALL (WITH FLAPS)

- Straight Ahead or Turning
- No Lower Than 1500' AGL
- 1. Ask passengers to help look for traffic.
- 2. CRAC Pre-Maneuver Checks.
- 3. Carb Heat: ON
- 4. Reduce power to 1500 RPM, hold altitude.
- 5. Airspeed "White Arc" apply full flaps, decrease pitch and maintain 65 KIAS.

- 6. At 65 KIAS, establish a descent (as you would if coming in for landing), smoothly roll into a 15° bank turn, power to idle, and raise pitch to slightly above the horizon.
- 7. At the first indication and, subsequently, development of a full stall, call out the source of the stall (warning horn, aerodynamic buffet, or other indication) and Stalling.
- 8. Simultaneously reduce pitch, level wings and add full power while applying right rudder.
- 9. Carb Heat: OFF
- 10. Retract flaps to 20º, set a Vx (63 KAIS) climb pitch attitude
- 11. As the aircraft stabilizes, raise flaps to 10° and set Vy climb attitude
- 12. Above Vy (74k KIAS), flaps up.
- 13. Transition to cruise at target altitude.

POWER ON STALL

- No Lower Than 1500' AGL
- 1. Ask passengers to help look for traffic.
- 2. CRAC Pre-Maneuver Checks.
- 3. Carb Heat: ON
- 4. Reduce power to 1500 RPM.
- 5. Hold altitude and heading.
- 6. At 55 KIAS smoothly apply full power, and right rudder to hold heading.
- 7. Carb Heat: OFF
- 8. Gradually continue to increase pitch 1 degree per second until “Toes on the Horizon”, (approximately 22°).
- 10. At the stall call out Stalling and source of stall (warning horn, aerodynamic buffet), then lower pitch below the horizon.
- 11. Level the wings using ailerons, coordinate with rudder.
- 12. Smoothly raise pitch to climb attitude while applying right rudder.- 13. Transition to cruise at target altitude.

RECTANGULAR COURSE

- At 1000' AGL
- 1. Ask passengers to help look for traffic.
- 2. Pre-Maneuver Checks.
- 3. Locate a road, railroad, powerline segment approx. the length of a runway (1 mile). - 4. Ensure you will be in position to glide to a landing at a suitable field throughout the maneuver.
- 5. Maintain 90 KIAS (approx. 2100 RPM) and approx. 1000’ AGL.
- 6. Enter at a 45º angle to the downwind toward the center of the reference area.
- 7. Turn a parallel course, keeping the reference on your left side.
- 8. Bug/note your entry heading.
- 9. Maintain a constant distance to the “runway”, considering the wind’s effect on both crab angle, and timing of the next turn.
- 10. Time the beginning of the next turn based on two factors- 10a. Ground speed in current leg.

- 10b. The turn is more or less than 90° of turn based on wind correction angles.
- 11. Complete one full lap around the course.
- 12. Exit on a 45º angle to the downwind.

TURNS AROUND A POINT

- At 1000' AGL
- 1. Ask passengers to help look for traffic.
- 2. CRAC Pre-Maneuver Checks.
- 3. Ensure you will be in position to glide to a landing at a suitable field throughout the maneuver.
- 4. Maintain 90 KIAS (about 2100 RPM) and approx. 1000’ AGL.
- 5. Determine wind direction.
- 6. Enter the maneuver on a downwind heading, and bug/note the heading.
- 7. Begin the steepest turn just as the point passes off your left wing.
- 8. Adjust your bank proportionately as your ground speed changes due to wind.- 10. Roll out on your entry heading after 2 complete turns.

S-TURNS ACROSS A ROAD

- At 1000' AGL
- 1. Ask passengers to help look for traffic.
- 2. CRAC Pre-Maneuver Checks.
- 3. Ensure you will be in position to glide to a landing at a suitable field throughout the maneuver.
- 4. Maintain 90 KIAS (about 2100 RPM) and approx. 1000’ AGL.
- 5. Enter the maneuver on a downwind heading and note the heading.
- 6. Begin your steepest turn to the left as the road passes underneath and select apex point to fly around.
- 7. Adjust your bank through the first turn, shallowing the bank to roll out 180º from the entry heading and perpendicular at crossing the road.
- 8. As you cross the road again, slowly roll into a shallower bank to the right, select apex point to fly around and increase the bank throughout the second turn.
- 9. Rollout as you cross the road, perpendicular to your entry heading.

EMERGENCY LANDING

- 1. Airspeed – Apply 3 turns nose up trim to hold 65 KIAS.
- 2. Best place to land – Turn toward the best site considering ability to get there, i.e., length, obstructions, surface, wind direction. If altitude permits, enter a traffic pattern to position the aircraft abeam the touchdown point at 1,300’ AGL. - 3. Checklist
- • Fuel selector – BOTH
- • Mixture – RICH
- • Throttle – ADJUST
- • Carb Heat – ON
- • Mags – CHECK LEFT, RIGHT, and BOTH
- • Primer - IN AND LOCKED

- 4. Declare – Transponder – 7700, Current ATC frequency or 121.5, “Mayday, Mayday, Mayday (include aircraft ID, nature of emergency, intentions, location, fuel and souls on board)”.
- 5. Exit – Just prior to landing
- • Fuel Selector - OFF
- • Mixture – IDLE CUTOFF
- • Mags – OFF
- • Master switch – OFF (if you don’t need radio, flaps or lights for landing)
- • Doors – UNLATCH (Open doors , then put handle full forward to prevent door from reclosing)
- Execute landing slightly tail low, and with full back pressure after touchdown.
- Remember that with no engine power, gliding to a specific point can be accomplished using several ‘tools’ for losing altitude, (forward slips, flaps, S-turns, and circling).
- Maintaining best glide speed (65 KIAS), as well as slowing your airspeed enough to stop the propeller (only after C-checklist is unsuccessful) will allow for the greatest distance to be flown for any given altitude.

EMERGENCY DESCENT

- 1. Ask passengers to look for traffic.
- 2. Pre-Maneuver Checks.
- 3. Carb heat on, power to idle.
- 4. Smoothly roll into a 30° - 45° bank to the left and pitch 20° nose down.
- 5. Adjust pitch for Vne or Vno as appropriate.
- 6. Resume level flight no lower than 1000’ AGL.

POWER OFF LANDING (NO FLAPS)

- 1. Complete Before landing checklist.
- 2. Abeam touchdown point, power idle, 3 turns of nose up trim. Adjust pitch for 65 KIAS.
- 3. Level off at 10’ AGL.
- 4. At 5’ AGL, gradually increase pitch to slow descent until touchdown.
- 5. Reference the far end of the runway for centerline alignment and altitude. Maintain centerline with bank, point nose with rudder.
- 6. Hold elevator aft through the roll out and add in crosswind correction as the aircraft slows.
- 7. Clear the runway and stop past the hold short line.
- 8. Complete the “After Landing” flow and then checklist.

NORMAL LANDING

- Complete Descent/Approach and Pre-Landing Checklists
- 1. On downwind, abeam the point of intended touch-down, Carb Heat: ON, reduce power to 1500 RPM.
- 2. Hold altitude with pitch. Airspeed "White Arc" - Flaps 10”, and then reduce pitch to maintain 80 KIAS.
- 3. When threshold is 45° behind the aircraft, turn base Airspeed "White Arc" - Flaps 20”. Check for traffic on final while wing is up.

- 4. Maintain 70 KIAS with pitch.
- 5. Turn final. (Check traffic on final, plan to roll out on extended runway centerline considering the wind's effect on the turn.)
- 6. Airspeed "White Arc" - Apply 30° or 40 of flaps if at/above glideslope.
- 7. Adjust pitch to hold 65 KIAS and adjust position on glidepath with power.
- 8. When able to glide to the runway, pitch down slightly, power to idle. Level off at 10' AGL.
- 9. At 5' AGL, gradually increase pitch to slow descent until touchdown.
- 10. Reference the far end of the runway for centerline alignment and altitude. Maintain centerline with bank, point nose with rudder.
- 11. Hold elevator back pressure through the roll out and add in crosswind correction as the aircraft slows.
- 12. Clear the runway and stop past the hold short line.
- 13. Complete the "After Landing" flow and then checklist.

SOFT FIELD TAKEOFF

- Complete Soft Field Takeoff Checklist- 1. Flaps to 10°.
- 2. Taxi with elevator full aft, using minimal brakes.
- 3. Line up on the runway without stopping and slowly add half power.
- 4. Check oil temperature and pressure in the green "Engine Instruments in the Green", and airspeed indicator increases "Airspeed Alive".
- 5. When the top edge of the cowling rises to the horizon, increase power to full and adjust to keep pitch on the horizon.
- 6. As main wheels come off the ground, smoothly reduce pitch to hold aircraft just above the runway.
- 7. Accelerate to Vx (63 KIAS), then nose up
- 8. Establish a wind correction angle to stay over the extended runway centerline.
- 9. Keep the climb attitude at Vx until 500 AGL and then retract flaps for a climb speed of 80 KIAS.
- 10. Perform the "After Takeoff" checklist above 500' AGL.

SOFT FIELD LANDING

- Complete Soft Field Landing Checklist- 1. Fly approach same as normal landing.
- 2. Reference the far end of the runway for centerline alignment and altitude. Maintain centerline with bank, point nose with rudder.
- 3. At 5' AGL and in the flare, add just enough power to hear an audible change in engine RPM (approx. 1200 RPM).
- 4. Hold aircraft off the ground in the flare as long as possible.
- 5. At touch-down, power to idle, elevator – full aft, minimal braking, ailerons into the wind.
- 6. Clear the runway and stop past the hold short line, then complete the "After Landing" flow, then checklist.

SHORT FIELD TAKEOFF

- Complete Short Field Takeoff Checklist- 1. Flaps 10º.
- 2. Line up on runway as close to threshold as possible.

- 3. Hold elevator with gust lock hole 1” back from collar.
- 4. Hold brakes and apply full power.
- 5. Check for at least 2250 RPM “Power set”, and oil temperature and pressure in the green “Engine Instruments Green”.
- 6. Release brakes. “Airspeed Alive”, accelerate to 51 KIAS, and then firmly raise the pitch to 15° nose up. Maintain 57 KIAS.
- 7. At 500’ AGL, lower top of cowling just above horizon, above Vx 63 KIAS retract flaps.
- 8. Perform the “After Takeoff” checklist.- 9. Adjust pitch to climb at 80 KIAS.

SHORT FIELD LANDING

- Complete Short Field Landing Checklist- 1. Identify intended touchdown point.
- 2. Fly approach same as normal landing.
- 3. On final approach adjust power to maintain glideslope, and pitch to maintain 60 KIAS.- 4. When clear of obstacle or touchdown point is made, reduce pitch, power to idle.
- 5. Round out just above the runway to touchdown. Use power to extend glide to just before the touchdown point.
- 6. Touchdown on or within 200 feet beyond identified touchdown point.
- 7. Immediately after touchdown lower nose to the runway, apply brakes as required (SIMULATE max braking and call out “Simulated Max Braking” on a simulated short field), retract flaps, yoke aft and ailerons into the wind.
- 8. Clear the runway and stop past the hold short line.- 9. Complete the “After Landing” flow then checklist.

GO-AROUND (REJECTED LANDING)

- 1. Add full power.- 2. Carb Heat: OFF - 3. Pitch to Vx.
- 4. Retract flaps to 20°.
- 5. Maintain centerline of runway until clear of obstacles.-
- 6. Climb to 500 AGL
- 7. Retract flaps to 10° and establish Vy 73 KIAS climb attitude
- 8. Pitch to 80 KIAS, retract flaps to 0°.
- 9. Contact ATC and inform them of go around.
- 10. Complete the “After Takeoff” flow then checklist.