Note: All sorties will have a minimum altitude or "hard deck" of 4500' MSL, leaving at least 3000' of airspace as a safety buffer. At the first indication that a maneuver will go below 4500', the pilot will immediately announce "knock it off" and terminate the maneuver using the RMRC procedure.

UUART 1 : 30 Brief + 1:10 Flight + :30 Debrief 2:30 Block

Briefing (Parachute fitting and familiarization, safety brief, maneuver brief)

Departure Climb set 25", 2500 RPM, 90 MPH, level 7500' MSL

Turns left and right / Coordination training

Adverse Yaw Demonstration

Area (Clear area before, during, and after each maneuver)

Intro to Relax, Max, Roll, Climb (RMRC) and neutral stick positions

Rudder/Roll Coupling - "Falling Leaf" Demonstration

1) Set 18", 2500 RPM, 80 MPH, straight and level
2) Smoothly retard throttle to idle and steadily increase back stick pressure to hold altitude until the stall
3) Bring the stick smoothly full aft (IP will assist) and hold with neutral ailerons
4) Use rudder alone to keep the wings level (note divergent roll tendencies and rudder coupling)
5) Recover using RMRC procedure

Angle of Attack (AOA) Demonstration

1) Set level flight at 115 MPH (25" MP, 2500 RPM)
2) Lower the nose slightly and accelerate to 150 MPH
3) Smoothly but quickly pitch to approximately 45 degrees nose up (use side windows to find the horizon and estimate angle using the wing as a reference)
4) As the airspeed decays, relax the stick back pressure so that the airplane follows a parabolic trajectory
5) Note airspeed across the top of the maneuver and apply left and right aileron to prove that the you still have control well below the published stall speed (may see some left torque roll tendency)
6) Apply back pressure to the buffet to minimize altitude loss on the backside of the parabola
7) Recover to level flight

"Pull" Response Demonstration (Spiral dive)

Straight ahead stalls (Power off entry and recovery)

1) Set 80", 2500 RPM, and level coordinated flight
2) Smoothly retard throttle to idle, note increasing back pressure and increasing AOA necessary to maintain altitude as airspeed decreases
3) Increase stick back pressure through stall warning until nose falls
4) Recover by releasing back stick pressure just enough to decrease the angle of attack and get the wing flying again

Practice "Relax, Max, Roll, Climb" from nose high and low setups with bank angles up to 45 degrees

Aileron Roll

1) Set 25", 2500 RPM, 115 MPH in level coordinated flight
2) Smoothly raise the nose to put the top of the cowling on the horizon
3) Neutralize the elevator
4) Apply full aileron and coordinated rudder in the desired roll direction
5) Continue roll until wings level again with the nose approximately as far below the horizon as it started above

Note: If nose drops below the horizon before reaching the inverted position, recover using "Relax, Max, Roll, Climb"

Loop

1) Set 25", 2500 RPM, 115 MPH in level coordinated flight
2) Lower the nose slightly and accelerate to 150 MPH maintaining coordinated flight (some left rudder will be necessary)
3) Clear flightpath then smoothly apply straight back stick pressure to reach 3.5-4 Gs on the G meter
4) As the nose climbs above the horizon, look over your left shoulder at the wingtip to determine attitude, THen look "up" to pick up the horizon as is comes over your head
5) As the aircraft passed the vertical, begin easing back stick pressure to cross the top of the loop at about 70-80 MPH and 1 G, use the inverted horizon to level the wings
6) As the nose begins to transition back down and airspeed builds, increase back stick pressure to keep the nose tracking at the same apparent rate across the ground
7) Recover to level flight at 150 MPH

Recovery

Debriefing/Questions

UUART 2 :30 Brief + 1:10 Flight + :30 Debrief 2:30 Block

Briefing (maneuver brief)

Departure Climb set 25", 2500 RPM, 90 MPH, 7500' MSL

Area (Clear area before, during, and after each maneuver)

Accelerated stalls

1) Set 18", 2500 RPM, 80 MPH level coordinated flight
2) Clear flightpath and make a coordinated roll to 30-45 degrees of bank
3) Increase back pressure and AOA to hold altitude
4) Smoothly reduce power to idle while holding altitude
5) Continue increasing back pressure through stall warning until nose drops
6) Recover using Relax, Max, Roll, Climb

Slipping Stall

1) Set 18", 2500 RPM, 80 MPH level coordinated flight
2) Clear flightpath and make a coordinated roll to 30-45 degrees of bank
3) Increase back pressure and AOA to hold altitude
4) Smoothly reduce power to idle while holding altitude
5) Smoothly increase top rudder and observe turn coordinator ball moving to the inside of the turn
6) Hold until stall break is reached - airplane my roll to the outside of the turn but will give plenty of warning
7) Recover after stall break using RMRC

Skidding stalls

1) Set 18", 2500 RPM, 80 MPH level coordinated flight
2) Clear flightpath and make a coordinated roll to 30-45 degrees of bank
3) Increase back pressure and AOA to hold altitude
4) Smoothly reduce power to idle while holding altitude
5) Smoothly increase bottom rudder and observe turn coordinator ball moving to the outside of the turn
6) Hold until stall break is reached - airplane will roll quickly to the inside of the turn with little warning
7) Recover after stall break using RMRC

Incipient spin recovery

1) Set 18", 2500 RPM, 80 MPH level coordinated flight
2) Clear around and below aircraft
3) Smoothly retard throttle to idle while maintaing altitude and coordination
4) Continue to increase back pressure until the aircraft stalls
5) At the buffet, apply full rudder in the desired direction of rotation
6) The IP will announce "Recover" as desired

7) Apply the “Spin Prevent” maneuver (idle, neutral aileron, then forward
8) Recover to level flight

Developed Spin Recovery

1) Set 18”, 2500 RPM, 80 MPH level coordinated flight
2) Clear around and below aircraft
3) Smoothly retard throttle to idle while maintaing altitude and coordination
4) Continue to increase back pressure until the aircraft stalls
5) At the buffet, apply full rudder in the desired direction of rotation
6) Hold full aft stick, neutral aileron and full pro-spin rudder until the IP says “Recover”
7) Apply NASA spin recovery procedure
    a. **P**ower - Idle
    b. **A**ilerons - Neutral
    c. **R**udder - Full deflection opposite the direction of yaw
    d. **E**levator - Briskly forward of neutral
    e. Max perform the recovery to minimize altitude loss

Upset recovery practice (up to 90 degrees of bank)

Split-S

1) Set 18”, 2500 RPM, 80 MPH level coordinated flight
2) Clear around and below aircraft
3) Roll to inverted using coordinated ailerons and rudder
4) Reduce power to idle
5) Apply back stick pressure to the buffet
6) Use ground references to ensure a straight nose track
7) Recover to level flight attitude

Recovery

Debriefing/Questions

UUART 3 :30 Brief + 1:10 Flight + :30 Debrief 2:30 Block

Briefing (maneuver brief)

Departure Climb set 25", 2500 RPM, 90 MPH, 7500' MSL

Area (Clear area before, during, and after each maneuver)

Inverted recoveries using RMRC (beyond 90 degrees of bank)

Vertical recoveries using RMRC (pitch attitudes greater than 60 degrees)

Spin prevent practice from various entries

NASA spin recovery practice

1) Set 18", 2500 RPM, 80 MPH level coordinated flight
2) Clear around and below aircraft
3) Smoothly retard throttle to idle while maintaing altitude and coordination
4) Continue to increase back pressure until the aircraft stalls
5) At the buffet, apply full rudder in the desired direction of rotation
6) Hold full aft stick, neutral aileron and full pro-spin rudder until the IP says "Recover"
7) Apply NASA spin recovery procedure
    a. **P**ower - Idle
    b. **A**ilerons - Neutral
    c. **R**udder - Full deflection opposite the direction of yaw
    d. **E**levator - Briskly forward of neutral
    e. Max perform the recovery to minimize altitude loss

* Once the spin has stopped apply RMRC

Cuban-8

1) Set 25", 2500 RPM, 115 MPH in level coordinated flight
2) Lower the nose slightly and accelerate to 150 MPH maintaining coordinated flight (some left rudder will be necessary)
3) Smoothly apply straight back stick pressure to reach 3 Gs on the G meter
4) As the nose climbs above the horizon, look over your left shoulder at the wingtip to determine attitude, then look "up" to pick up the horizon as is comes over your head
5) As the aircraft passed the vertical, begin easing back stick pressure to cross the top of the loop at about 70-80 MPH and 1 G, use the inverted horizon to level the wings
6) As the nose tracks down along your ground reference, look across your left shoulder at the wingtip for pitch angle information

7) When the ground and wingtip approaches an approximate 45 degree angle, look forward and push forward on the stick enough to stop the nose track across the ground
8) Apply full aileron and coordinated rudder to roll upright around the point on the ground
9) Once wings level, cross check your altitude and airspeed for hard decks and 150-160 mph
10) Repeat steps 3-9 with a roll in the opposite direction
11) Recover after the second partial loop to wings level coordinated flight

Recovery

Debriefing/Questions