

# Mission File: Steep Turn

[Mission Name]

Steep Turn

[Mission Description]

The flight student is required to first execute a 45-degree steep turn to the left, completing a 360-degree turn, and then execute a 45-degree steep turn to the right, completing another 360-degree turn.

[Entry Criteria]

- Straight and level flight
- Trim the aircraft
- Altitude>1500 ft
- Confirm heading
- Select turn direction
- Airspeed not below 100 knots
- Cruise power approximately 60-70%

[Mission Steps]

Phase	Step	Pilot's operation	Pilot's eye attention	Stick	Rudder	Throttle
Pre-entry check	1	Check the altimeter: Altitude greater than 1500 ft, true altitude	altimeter indicator			
	2	Check the airspeed indicator: Speed not less than 100 knots	airspeed indicator			
	3	Check the heading indicator (confirm heading) and the direction indicator. Ensure the aircraft is in straight and level flight by verifying the attitude	heading indicator			

		indicator, airspeed indicator, and altimeter for stability.				
	4	Look outside the cockpit and select a reference point or landmark on or about the same heading	look outside			
	5	Cruise power is approximately 60%-70% (throttle lever)				approximately 60%-70%
Begin the turn (Angle of Bank)	1	Rotate the control stick: Gently and slowly move the control stick to the left to begin the turn (avoid abrupt movements as they may cause the aircraft to lose balance).		Gently and slowly move the control stick to the left		
	2	Adjust the rudder while turning the control stick: As you turn the control stick to the left, gently apply left rudder (to prevent aircraft skidding).			gently apply left rudder	
	3	When the angle of bank reaches 10-15 degrees, slightly ease off the control stick to prevent the bank angle from increasing too quickly.	angle of bank 10-15 degrees	slightly ease off the control stick		
	4	When the bank angle reaches approximately 30 degrees, begin to slightly increase the throttle to compensate for the loss of lift due to the increased bank angle (engine RPM should increase by 100 RPM at 45 degrees).	angle of bank Approximately 30 degrees			slightly increase the throttle

	5	Simultaneously, gently pull back on the control stick to increase the aircraft's angle of attack and maintain altitude.		gently pull back on the control stick		
	6	Continue to slowly increase the control stick angle, monitoring the bank indicator. When the bank angle reaches 45 degrees, maintain the current position of the control stick.	monitoring the bank indicator	increase the control stick angle left		
	7	When the angle of bank reaches 45 degrees, perform checks to overcome roll inertia and reduce rudder pressure to maintain balance	check		reduce rudder pressure	
Maintain attitude	1	Complete the "Lookout-Attitude-Instruments" check	LAI check			
	2	During the turn, apply back pressure (slightly pull back on the control stick) to maintain altitude.	LAI check	slightly pull back on the control stick		
	3	If the aircraft is climbing or descending at this time, adjust the amount of back pressure while ensuring the bank angle remains constant to maintain a steady altitude.	LAI check ensuring the bank angle remains constant to maintain a steady altitude.			
Rollout/Exit	1	Look into the turn for traffic and the reference point. As a guide, allow for inertia by anticipating the roll out by	Look into the turn for traffic and			

		about half the bank angle before the reference point. For the average training aeroplane, this will be 20 degrees.	the reference point.  Allow for inertia by anticipating the roll out by about half the bank angle before the reference point.			
	2	<b>Start your rollout</b> within about 20 degree bank (for steep turns) of your original heading. Smoothly turn the control stick to the right to level the wings.		turn the control stick to the right		
	3	Apply right rudder to counteract adverse yaw				
	4	Then release back pressure on the stick to return to level attitude. Reduce power to cruise setting.	Attitude indicator  return to level attitude	release back pressure on the stick		
<b>Turn Right</b>						
Pre-entry check	1	Check the altimeter: Altitude greater than 1500 ft, true altitude	altimeter indicator			
	2	Check the airspeed indicator: Speed not less than 100 knots	airspeed indicator			
	3	Check the heading indicator (confirm heading) and the direction indicator. Ensure the aircraft is in straight and level flight by verifying the attitude indicator, airspeed	heading indicator			

		indicator, and altimeter for stability.				
	4	Look outside the cockpit and select a reference point or landmark on or about the same heading	look outside			
	5	Cruise power is approximately 60%-70% (throttle lever)				approximately 60%-70%
Begin the turn (Angle of Bank)	1	Rotate the control stick: Gently and slowly move the control stick to the right to begin the turn (avoid abrupt movements as they may cause the aircraft to lose balance).		Gently and slowly move the control stick to the right		
	2	Adjust the rudder while turning the control stick: As you turn the control stick to the right, gently apply right rudder (to prevent aircraft skidding).			gently apply right rudder	
	3	When the angle of bank reaches 10-15 degrees, slightly ease off the control stick to prevent the bank angle from increasing too quickly.	angle of bank 10-15 degrees	slightly ease off the control stick		
	4	When the bank angle reaches approximately 30 degrees, begin to slightly increase the throttle to compensate for the loss of lift due to the increased bank angle (engine RPM should increase by 100 RPM at 45 degrees).	angle of bank Approximately 30 degrees			slightly increase the throttle
	5					

		Simultaneously, gently pull back on the control stick to increase the aircraft's angle of attack and maintain altitude.		gently pull back on the control stick		
	6	Continue to slowly increase the control stick angle, monitoring the bank indicator. When the bank angle reaches 45 degrees, maintain the current position of the control stick.	monitoring the bank indicator	increase the control stick angle right		
	7	When the angle of bank reaches 45 degrees, perform checks to overcome roll inertia and reduce rudder pressure to maintain balance	check		reduce rudder pressure	
Maintain attitude	1	Complete the "Lookout-Attitude-Instruments" check	LAI check			
	2	During the turn, apply back pressure (slightly pull back on the control stick) to maintain altitude.	LAI check	slightly pull back on the control stick		
	3	If the aircraft is climbing or descending at this time, adjust the amount of back pressure while ensuring the bank angle remains constant to maintain a steady altitude.	LAI check ensuring the bank angle remains constant to maintain a steady altitude.			
Rollout/Exit	1	Look into the turn for traffic and the reference point. As a guide, allow for inertia by anticipating the roll out by about half the bank angle before the reference point.	Look into the turn for traffic and the reference point.			

		For the average training aeroplane, this will be 20 degrees.	Allow for inertia by anticipating the roll out by about half the bank angle before the reference point.			
	2	<b>Start your rollout</b> within about 20 degree bank (for steep turns) of your original heading. Smoothly turn the control stick to the right to level the wings.		turn the control stick to the right		
	3	Apply right rudder to counteract adverse yaw				
	4	Then release back pressure on the stick to return to level attitude. Reduce power to cruise setting.	Attitude indicator return to level attitude	release back pressure on the stick		

## [Dangerous Situations]

### **Situation Name:** Spiral dive

Causes: Insufficient Back Pressure

Symptoms:

- High angle of bank
- High rate of descent
- Increased speed
- Increased G-force

Recovery:

- Power idle
- Roll wings level

- Gently apply back pressure and ease out the dive
- Adopt a normal cruise attitude
- Slowly apply full power
- Adopt initial altitude

**Situation Name:** Unusual Attitude

Causes: Too much Back Pressure

Symptoms:

- High nose attitude
- Steep angle of bank
- Decreasing Speed

Recovery:

- Lower the nose
- Apply full power
- Apply opposite ailerons to Roll wings level
- Raise the nose to adopt a normal cruise attitude

**[Evaluation Criteria]**

- Altitude within  $\pm 150$  feet ( $\pm 45$  meters)
- Airspeed within  $\pm 10$  knots
- Bank angle within  $\pm 5^\circ$
- Heading change within  $\pm 15^\circ$