MERLIN
FLIGHT TRAINING

Private Pilot Syllabus

MERLIN FLIGHT TRAINING

STUDENT AND FLIGHT INSTRUCTOR GUIDE
PRIVATE STAGE

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Welcome to the Flight Instructor and Student Pilot Guide!

This document is a guide for Merlin Flight Training CFI's and students, giving instruction utilizing Merlin Flight Trainining's curriculum. Here, you will find tips, techniques, and guidance to prepare student pilots or yourself to become a skilled, professional pilot and the syllabus structure of a private pilot training program.

The Private Pilot Syllabus is structured to match the lessons in the Merlin Flight Training program outline. In contract, the program outline tells what to teach in each flight block. This document gives an example of step-by-step guidance on how to prepare and what to expect. Wherever the program outline has a block of flight time (e.g. Fundementals block, TOL block), the Private Pilot Syllabus breaks it up into several lessons, each with its own suggested focus and set of progress standards.

It is recommended that prior to each lesson, the student and flight instructor review the section of the Private Pilot Syllabus corresponding to that lesson. You may adjust these lessons to fit your airport and training area environment. However, following this guide will keep you aligned with the program outline. The student can prepare for the same lesson by reviewing the syllabus and completing the corresponding studying items.

Fundamentals

Private Fundamentals and TOL
1 two-hour AATD period
1 flight, 2 hours

Flight Instructor Expectations

Durring this block, the student will receive an introduction to the Merlin Flight Training program, According to the laws of primacy, what your student experience on these AATD lessons and flights will set the tone for the rest of their training. Consider what are the most important aspects of being a successful student and pilot. Emphasize those aspects during the flight. Be positive, let the student have fun, and establish a professional student-instructor relationship.

The Fundementals AATD lesson will be a singular two hour AATD lesson. If the student is beginning to become fatigued during the lesson, they may have a deterioration of learning. If its possible to take a break do so. From a training standpoint, during this flight block, the student will begin to establish the correct visual references and control feel that will form the foundation of competent VFR flying.

In addition to the four fundamental basic flight maneuvers (straight-and-level flight, turns, climbs, and descents) Airpalne Flying Handbook Chapter 3, the student should also observe, and then practice, the following flight skills:

- Changing indicated speed in level flight
- Changing flap settings while holding altitude
- Use of trip to relieve control pressures (and the importance of adjusting trim when changing speed or configuration)

To keep the student focused on sight picture and control feel, the instructior will perform all checklists and radio communications. The instructor will model proper checklist usage and radio phraseology, but

the student should not participate at this time. A very basic level introduction to Garmin avionics will also be part of the Fundamentals lessons.

Instructing Tips for This Stage

- Use the **demonstration-performance method:** for each basic maneuver to be performed. First, demonstrate the maneuver while pointing out to the student the correct visual references for that maneuver. The student may also shadow the instructor on the controls to learn what control inputs are required. After observing, the student will then perform the maneuver while the instructor supervises. Finally, assess the student's performance.
- After each AATD and flight lesson, conduct a thorough **post-flight brief** with the student. Go over everything that was covered in the AATD and on the ground. Try to keep it in chronological order so the student can follow the timeline of the event. Always provide feedback that encourages the student and motivated them to do their best. Ensure that any questions from the lesson are answered, and go over what will be accomplished during the next lesson. Other items to review are the requirements for the upcoming lesson topics, how to study for the lessons and what material will assist in the next lessons. Explain the logbook entries as you enter them and dont let the student enter the logbook entries themself. Logbooks are professional records and students often make mistakes while filling out a logbook. Merlin Flight Training advises that students will not be able to create their own entries until the solo stage.
- The instructor shall **occupy the right seat** of the AATD **at all times** during the lesson or sit in a chair to the right of the student if the device only has one seat.
- The AATD session needs to feel as real as possible. Overall AATD volume can be utilized to provide real sound features during the session. You can promote this by ensuring that you and the student have on a headset if the AATD has an intercom system. Ensure that the student is also utilizing their knee board with ForeFlight and checklist attached to represent actions that would be performed in the actual airplane. The more real you make the AATD experience, the better the training will be received by the student (**The Law of Intensity**).
- Teaching sight picture. Before you can teach proper sight picture you will need to explain what sight picture is. Learn your student' background and experiences that may assist in their understanding. For example a student that has experience aiming a rifle will have an established skill of lining the eye with an aiming point and a target. Other student will have no such experience and you will have to be even more basic in your explanation. Consider drawing pictures of various sight pictures nd aiming points in your prebriefing.

Teach your student how to align their eyes with an **aiming point** on specific locations on the airplane and how to align that with a point on the horizon or a ground reference point that is between the horizon and the airplane. They should learn several aiming points for each aircraft movement. These multiple aiming points will make up the sum of the sight picture for each attitude change of the airplane.

Before you can demonstrate the aiming points you must first ensure that your student has their seat adjusted properly and they can see over the instrument panel while still bale to see all of the instruments. The student should consistently use this **same seat position on every flight**. Note: Some students may have to sit on a seat cushion to obtain a proper eye position. This cushion may also be needed in the airplane. Training with an improper eye point will introduce negative training habits.

Look at your students eyes while they are learning the sight picture to see where they are actually looking.

Discourage your student form looking at the instrument too much, remind them of the **90%-10% rule**. Counth through the 10 seconds and have them look down for only one second with a quick **instrument scan**.

In addition to teaching the sight picture for every aircraft attitude and position point out to the student that **changes in sound** that correspond to airspeed changes.

- Performance, Limitations, and Airworthiness. The **Law of Primacy**, in regards to understanding the importance of each topic. Make sure that each lesson, the student has a clear understanding of what is expected prior to each lesson and why it is important.

Fundamentals AATD

Private Fundamentals and TOL
Pre-brief

- ➔ Introcution to the AATD Flight controls
- ➔ Using Sight Picture for maneuvering
- ➔ Correct braking Technique
- ➔ Review Fundamentals of Flight
- ➔ Traffic Awareness / Collision Avoidance
- ➔ Emergency Egress Procedures
- ➔ Pre-Takeoff Brief
- ➔ Control Feel
- ➔ Looking Outside approximately 90% of the time
- ➔ Introduce the use of GPS while training

Flight Outline

- ☐ Straight-and-level flight
- ☐ Climbs and descents
- ☐ Turns
- ☐ Speed Changes
- ☐ Flap setting changes
- ☐ Use of trip to relieve control pressures
- ☐ Changing Airspeed in Level Flight
- ☐ Intro to GPS
    - Enter and exit the Flight Plan Page
    - Use the Direct-Enter-Enter function
    - Reading GPS information
    - How to enter com 1 and com 2 frequencies
    - How to enter nav 1 and nav 2 frequencies

Progress Standards

By the end of this flight, the student should be able to:

- ➔ Remember and implement some of the instructor's input from the previous lesson
- ➔ Hold course and altitude steady without referencing the flight instruments
- ➔ Make turns, climbs, and descents using only the sight picture reference
- ➔ Understand the purpose of trim and how to use it
- ➔ Make appropriate corrections when left or right of centerline (taxi)

Lesson Guide

AATD Setup

Weight: 2250	Fuel: Max
Winds: Calm	Visibility: 10
Clouds: Broken 10,000	Temp & Pressure: 15c / 30.06” Hg

Position

- This lesson starts with the engine running and holding short of the runway.

Frequencies

ASOS-	GND-	DEP-
CLNC DEL-	TWR-	APCH-
PRACTICE AREA-	VOR	

Engine Starting: PACS.II.C

- Instructor will start engine from device with all avionics operational before the lesson.

Flight Deck Managment: PACS.II.B

- Use of the intercom system

- How to transmit on the radio

Taxiing: PACS.II.D

- Instructor will explain how to steer the airplane, and use brakes. (note) "Perform brake check immediately after airplane begins moving."
- Student will not receive a taxi clearance during this stage of training
- Student will taxi to the runway

Takeoff: PACS.IV.A

- The Instructor will pause the simulator, explain one normal takeoff and climb straight ahead to 3,500' MSL
- Instructor will demonstrate proper use of the checklist
- Bug headings and Altitudes prior to departure
- Explain rotation speed and control pressures required to takeoff
- Allow the student to conduct this

Fundamentals of Flight

- Explain the climbing technique and the outside sight picture associated with it
    - Allow the student to practice this
    - Keep hands on throttle until 1000' AGL
- Explain the level off at 3500' MSL and the outside sight picture associated with it
    - Initiate another climb to 4500' MSL and have the student begin the level off prior to reaching 4500' MSL (10% of the Rate of Climb)
- Explain how to turn the airplane while maintaining level flight
    - Allow the student to practice this
- Explain a descent while maintaining straight flight
    - Allow the student to practice this
    - Level off at 3500' MSL
- Reduce the power setting by 200 RPM and maintain the altitude
    - Show the student how this directly affects the pitch attitude required to maintain their altitude
    - Show the student how this affects their indicated airspeed
    - Demonstrate elevator trim to allow hands-off flying
- Increase the power setting by 500RPM
    - Show the student how this directly affects the pitch attitude and the indicated airspeed
    - Hold the yoke to a pitch angle slightly above the horizon and allow the airplane to maintain an airspeed

    - Trim and demonstrate hands-off flying while maintaining that pitch angle and airspeed.
- Have the student level off and reduce the power back to a cruise setting
- Slow the airplane down to V(FE) and introduce 10 degrees of flaps
    - Explain how the airplane center of lift has shifted and how the sight picture and airspeed have changed
    - Repeat this as you introduce 20 degrees of flaps- Have the student apply the final 30 degrees of flaps.
    - Reduce power by 200 RPM and allow the airplane to descent 500’
    - Add full power and allow the airplane to climb back to the original altitude
    - Bring the flaps back to 0 degrees, stopping at each flap setting and allowing the airplane to stabalize while adjusting the trim as needed- Have the student reduce the last 10 degrees of flaps and maintain the sight picture required for level flight.
    - Return the airplane back to its original cruise configuration and airspeed.

Flight Deck Managment: PACS.II.B

- Demonstrate usage of the GPS in flight.
- Have the student use the Direct-Enter-Enter feature to naviage to the home airport.
- Explain and have the student correct course deviations while reading the instrument correlating to the GPS.

Normal Approach and Landing PACS.IV.B

- If the flight simulator has dual controls, Demonstrate and explain one normal landign and have the student follow along
- Demonstrate aerodynamic braking and a rollout without the use of brakes

Postflight Procedure PACS.XII.A

- Allow the student to taxi to the ramp
- Demonstrate an engine shutdown utilizing the checklist

Debrief

The instructor will review the lesson in its entirety with the student. Start with a review of flight deck management and use of checklists. Ensure that the student has a basic understanding of taxiing procedures and when the use of brakes and power are needed. Conduct a very thorough review of the relationship between pitch, power, airspeed, configuration, and trip, and how these items work together. Be sure to also discuss how the forward sight picture can be used to fly the airplane without the use of the flight instruments, and how we depend on them mainly to provide a level of precision to our flying. Lastly, discuss the use of the checklist and its importance to ensure that relative tasks are covered and completed:

Discussion Prompt

1. What are some ways that you can control the airplane's speed?
2. What are some ways that you can control the airplane's altitude?
3. What does adding flaps to to your center of lift?
4. What are the things that make up a stabalized approach?
5. Where should your feet be while landing the airplane?
6. Explain how sight picture relates to airspeed and altitude control.
7. What would be the result of the power being reduced to idle during straight and level cruise flight?
8. What causes an airplane to turn?
9. What is the definition of angle of attack?
10. What is the purpose of flaps

Instructor Notes

Date_____ Hobbs_____ Tail#_____ Instructor_____

Logbook Entry

Flight: Training Per 61.129(i)(1)(i)

Student Lesson Grade (circle)

vv v ^ ^^

Fundamentals Flight

This 2 hour fundamentals flight is used to reinforce the tasks that were learned in the previous AATD lessons. This student should now be familiar with basic aircraft control. Allow the student to taxi and steer the aircraft. Demonstrate, with the student following along on the controls, the takeoff and climb out. Callout the Vr Speed and make sure that the student is listening. Depart the traffic pattern and proceed to the practice area. Demonstrate, if needed the fundamental task and then allow the student to practice. The more time the student has practicing while comfortable, the faster the student will learn. Return to the airport and demonstrate the landing and no breaking rollout as described in this lesson. Allow the student to taxi to the ramp, if capable.

Pre-brief

- ➔ Ramp Safety
- ➔ Preflight Inspection
- ➔ Positive Exchange of Flight Control
- ➔ Proper Seat Adjustment and Sight Picture
- ➔ Situational Awareness
- ➔ PIC Authority

Flight Outline

- ☐ Changing Airspeed in Level Flight
- ☐ Changing Flap Settings
- ☐ Trim Technique
- ☐ Climbs
- ☐ Descents
- ☐ Level Turns
- ☐ Normal Approach Landing

Progress Standards

By the end of this flight, the student should be able to:

- Understand the concept of visual references, and maintain a fixed visual reference point during a given basic maneuver such as climbs and straight–and–level flight
- Perform changes in airspeed and aircraft configurations without assistance
- Understand the function and importance of proper trim technique
- Taxi to the runway with minimal instructor intervention

Training Strategy

As stated in the introduction of this guide, when conducting training, it is best practice to lead by example around the actual airplane. This will help to better enforce the Law of Intensity and make the training more enjoyable for the student. You (The Instructor) will be in the right seat, for this lesson. Perform the preflight and have the student watch as you explain different parts of the aircraft. Ensure the student has a checklist to follow along during this stage. This is a great time to let the student ask questions and try to perform the preflight if they feel comfortable. The Flight instructor should as the student pilot if they are subject to IMSAFE prior to the flight.

Part 1: Before engine start:
Discuss basic procedures the student will use throughout their program. These include (but are not limited to):

- **Ramp Safety:** Explain to students how important it is to be cautious and vigilant on the ramp. Teach that staying safe on the ramp required situational awareness of aircraft starting up and taxiing (look for lighted aircraft beacons). The best way to stay safe is to stay aware! Stay off cell phone, iPad, and keep your eyes up for moving vehicles and aircraft.

- **Preflight Inspection:** On the first flight, demonstrate the preflight process. Ensure that the student has a correct and updated checklist and show them where to find the most recent edition. Look for opportunities to demonstrate safety-focused decisions. Pay attention to details like making sure to use the checklists,

- **Flight Deck Configuration:** It's good practice to buckle in the flight bags in the back seat or strap them down in the baggage compartment, (depending on weight and balance). That way they don't become loose during stalls or abnormal maneuvers. It is also required by the ACS.

- **Proper Seat Adjustment:** Sit in the aircraft with the student, and show them how to adjust the seat. Explain that whatever seat adjustments need to be made should be done consistently every flight: for example some students need the seat all the way up and three "clicks" away from full-forward, whereas some students need the seat almost all the way down and two clicks away from its full aft position.
- **Positive Exchange of Flight Controls:** While the positive three-step exchange of controls is important, at this early stage in training it is not totally practical. At this step in the students' learning, explain what it means

for the student to be shadowing the controls while the instructor demonstrates. Also explain that the instructor will be shadowing the controls to make the corrections and for the student not to relinquish the controls just because the student feels the instructor make a correction. The instructor will verablize control correction to the student. Explain that it is also normal for the instructor to occasionally block or limit the movement of the flight controls. The instructor should verbalize the blocking and control limiting actions. As the students' progress in skill, instructors will be able to rely on the practice of the three-step positive exchange of flight controls. At this point explain that it is important for both pilots not only to say the words of this exchange but to visually verify as well. "Look, verify, and release": If a visual verification is not made, there could be a moment where neither pilot is actually flying the aircraft.

The positive exchange of controls may be initiated by either the student or the instructor. The exchange may start by giving ("you have the flight controls") or taking ("I have the flight controls"). Make sure that if your student initiates the exchange, they remember to say the third part of the exchange. It is important that the student realizes the natural tendency to fight over the controls in a stressful situation and that they must relinquish the controls to the instructor without delay when the instructor commands "My Controls". It is important to remember that hte student should also understand the severity of the tone of your voice. Under certain circumstances, you may need to assume that flight controls before a positive exchange has occurred.

Part 2: During Flight:

- **Takeoff Roll:** Right rudder pressure will be required in order to maintain runway alignment throughout the takeoff roll. Instructor your student to anticipate need to apply the right rudder when releasing the brakes and to continue to apply the needed rudder pressure to maintain the center of the runway. It is common for the student to press the left rudder when they overcorrect with the right. It is also common for students to push the wrong rudder when the are anxious. Be prepared and anticipate this during the first few takeoff rolls. Be sure to demonstrate how they must release that excessive pressure off the right rudder to maintain alignment. The goal is to apply sufficient rudder pressure early enough that there is no left yaw during takeoff roll.

  New students who have trouble staying on centerline during taxi will tend to have the same problem during the takeoff roll. As speed increases on the

takeoff roll, the rudder will become more effective, and control pressure will be less. At these speeds, oscillations will be dangerous and harder to control. Instruct your students to make careful, gradual rudder inputs during the takeoff roll, and be on the controls ith them so as to prevent any abrupt movements. Looking down at the end of the runway, and not at the pavement in front of them, will help considerably with this.

- **Rotation:** Due to the center of gravity location, the plane may not lift off immediately at Vr. With two pilots in front and no passengers, the single-engine airplane will have a slightly forward center of gravity and the nose may be reluctant to lift off the runway. Remember, rotation is only the movement of the yoke and does not represent the speed in which the airplane will become unstruck from the runway surface. Inexperienced students might pull back on the yoke at rotation speed, notice that the nosewheel does not lift off immediately, and react by pulling back even more than is required for the climb-out. This can often result in a tail strike. Ensure that the proper sight picture is attained when rotating and hold that sight picture until the airplane is established in the upwind leg. This will also assist with back and forth movement on the yoke during the climb, which can cause stress on the student.

- **Straight and Level Flight:** Utilized integrated flight instruction to illustrate what proper straight and level flight is. Describe the relationship between the aircraft and the visible horizon, and demonstrate establishing the aintersecting reference point on the engine cowling or windscreen. Students should then understand that straight and level flight is achieved when the yline up that specific reference point with the horizon students in this stage of training should not determine straigh and level flight using the flight instruments. A tip to curb the student's desire to fixate on the instruments is to cover the panel or dim the display if you notice that behavior is forming.

- **Level Turns:** Once a student pilot is comfortable with straight and level flight, introduce level turns. Instruct the student to select a ground reference point outside the aircraft, on their periphery, and then to turn to that point. Describe the angle of the horizon in the windscreen and illustrate what it looks like when climbing or descending. Provide feedback to bank angles which will allow the student to perform theses turns without dependencies on the flight instruments.

Part 3: Approach and Landing

Approach: As you just practiced in the AATD, demonstrate how the airplane will be in a controlled descent, at a constant airspeed, trimmed, with little to no effort to maintain. The student must not be allowed to overcontrol the airpalne during this poriton of the training. These crucial first few hours will be demanding of you as the instructor, but will pay dividends as the training process.

Proper explanation of these techniques in the practice area will also save hours of training time in the traffic pattern. The student should understand that they will use their pitch, power, and configuration training during the approach for a successful landing. Feet should be off the brakes, heels should be on the floor. Remind them of G-C-A-S-H prior to landing. Have the student follow as you say GCASH aloud.

Landing: Most students, during the landing stage will have a tendency to look at the pavement in front of them, and not at the end of the runway. Looking at the pavement , observe the depth perception needed to properly land the airplane. As the airplane rounds out in ground effect, have the student look towards the end of the runway. As the airspeed bleeds off, the lift will reduce and the nose of the airplane will want to fall, and additional back pressure will be needed to hold the nose in the same position. This allows the airplane to continue to bleed off airspeed. Feed should be off the brakes, heels should be on the floor.

Touchdown: In this crucial stage of training, it is important to continue to have the student point their focus to the end of the runway. One way to do this is to ask them to try and NOT land the airplane. This is a valuable teaching tool because the student is actively thinking about actually landing the airplane. Ground effect will hold them off the runway is their speed is too fast. This will make the student want to push the airplane onto the runway when landing. You have to assure them that the airplane will eventually touch down, as long as they hold the proper pitch required for landing. The stall warning horn should sound just prior to touchdown- if you do not hear the horn, this is a good indication that the airplane touched down at an improper speed. Feet should be off the brakes, heels should be on the floor.

Correct Braking Technique: After touchdown, demonstrate that the airplane will decelerate sufficiently utilizing weight on wheels and aerodynamic braking only. Be sure to demonstrate the need to hold the nose wheel pressure off as long as possible in order to help transfer the weight from the wings to the wheels. Toes should be off the brakes, heels should be on the floor.

Demonstrate to the student a landing without the use of brakes. The purpose of this exercise is to show the importance of keeping heels on the floor during the landing.

Rushing to apply brakes cna lead to tire damage or even a loss of control. We at Merlin Flight Training suggest that this demonstration is conducted once on the first lesson and once on the two subsequent fundamental lessons.

On all other normal landing, you should also utilize minimal braking. Once the aircraft wheels are on the ground and flight controls (rudder) have lost aerodynamic effectiveness and the elevator/stabilator control is in a neutral position, slowly move the feet up onto the top portion of the pedals and into a position to gently apply toe brakes. The application of brakes must be smooth and coordinated. Incorporate the use of aerodynamic braking into the introduction of proper braking technique.

Be realistic about the needs to apply brakes. There is no reason to rush this process or aggressively decelerate during normal operations. Aggressively applying brakes or handing the toe brakes depressed upon touchdown can result in damage to the tire. This "flat spotting" of the tires could lead to a flat tire and can cause a loss of control and possible reunway excursion. Airplane control errors often occur when ladnign above Vso with excess speed, not on the centerline and rushing the transition of "heels on the floor" to toe brake application. Landing the airpalne with the technique as listed in the guide will ensure the airplane is landing at the slowest possible airspeed.

Sight Picture

The phrase "flying by sight picture" refers not only to sight but to all the senses. When describing and showing your student the proper sight picture for each stage of flight, be very specific. Don't stop at only describing the horizon in reference to the nose. Point out rivets or other features on the airframe that have a specific location. Utilize the windscreen frame, slide window, and specific points on the wing to poitn out the intersection f the horizon and these aircraft points. The student should be able to draw and describe the sight pictuer with specific details for each maneuver. They should know where to look in the landing flare. Insist that the student is not using flight instruments as a crutch. Sound plays an important part also. As speed changes, so does the sound of the wind rushing by. The pilot can hear the changes in engine sound as the pitch changes. The sense of touch is an important cue. Feeling the weight and tension on the yoke and rudder perdals, and the amount of force required to move them, tells the pilot a lot about the speed and load forces.
All sense taken together create a genuine "seat of the pants" flier.
Slow flight is a great way to build experience for the student to prepare for landing sight pictures.

To Go, or Not to Go? That is the Questions.

Part of teaching your student to be a responsible pilot is helping them develop the judgment to make a go/no-go decision. It is helpful to consider this occurring in several stages:

- **Stage 1:**(Fundamental Stage) The instructor makes a go / no-go decision for each flight and describes to the student the reasons behind the decision.
- **Stage 2:** (TOL, Maneuver Stage) The instructor works together with the student to collect the information required for the go / no-go decision, but takes full responsibility for the decision.
- **Stage 3:** (Solo Prep Stage) The student collects all relevant information and assesses the situation. The student then presents this to the instructor along with a hypothetical decision for the flight. The instructor then accepts or vetoes this decision.
    - Note that the "go/no-go" decision on each training flight is always ultimately the instructor's responsibility.

When the student is making a go-no-go decision during training, the decision should be considered from two different angles:

1) Hypothetical: Would the student fly solo in the current conditions?
    a) Considering the decision from this angle forces the student to consider his or her own personal minimums, student pilot limitations, solo limitations, and other regulations.
2) Actual: should we take this training flight?

Fundamentals Flight 1

Plan of Action - 2 Hours

Pre-brief

- ➔ Ramp Safety
- ➔ Preflight Insepction
- ➔ Positive Exhange of Flight Controls
- ➔ Proper Seat Adjustment and Sight Picture
- ➔ Situational Awareness
- ➔ PIC authority
- ➔ GCASH

Flight Outline

- ☐ Taxiing
- ☐ Normal Takeoff and Climb
- ☐ Straight and Level Flight
- ☐ Level Turns
- ☐ Changing Airspeed in Level Flight
- ☐ Changing Flaps Settings
- ☐ Trim Technique (pitch, power, trim)
- ☐ Climbs
- ☐ Descents
- ☐ Turns
- ☐ Normal Approach and Landing

De-brief

Students should know how to stay safe on the ramp after this flight. At this point, students should be guided through the preflight inspection process. The "what," "why," and "how" should be discussed regarding every item on the preflight checklist. Ensure that the student has a checklist before the flight.Also review the positive exchange of flight controls process is clearly understood and adhered to after this lesson. Emphasize the importance of seat adjustment and sight picture consistency.

Review with the student how pitch, power, airspeed, configuration, and trim are all working together. If they adjust one, they will normally have to adjust another. Discuss the pitch attitudes that the student has seen during takeoff climbout and

other stages of flight. This should be their initial go-to reference when flying the airplane. Remind them to back up what they are seeing on their instruments, but do not allow them to rely on them for sole reference of flying. Remind them of the 90/10% rule and talk through the seconds with them in order to reinforce this learning.

Review with the student the landing stage of flight. Discuss how they should not be using the actual runway for reference when in ground effect, and that it is best practice to use a reference point at the end of the runway (as they did when they performed the takeoff). This is similar to driving a car on the highway: you don't look right in front of you, you look further in front of you. Remind them of this and use that in your lesson.

Finally, discuss the importance of **understanding the published pattern altitudes** for the intended airport of use. The pattern altitude is below the standard 1,000 feet AGL. Run the before landing checklist as usual, but delay the start of descent until you can fly a normal descent path to the runway.

Discussion Prompt

1. How do you maintain positive aircraft control on the ground and in the air?
2. Describe these V-speeds: VR, VX, VY, VFE, VNO, VNE.
3. How can you recognize a climb or descent using sensory information?
4. Why is it important to use both rudder and yoke to perform coordinated level turns?
5. How can you control your ground speed while taxiing?
6. What is GCASH?

Maneuvers

4 hours of AATD time divided into 2 events
2 hours of airplane time

Introduction

This 2 hour fundamentals flight is used to reinforce the tasks that were learned in the previous AATD lessons. This student should now be familiar with basic aircraft control. Allow the student to taxi and steer the aircraft. Demonstrate, with the student following along on the controls, the takeoff and climb out. Callout the Vr Speed and make sure that the student is listening. Depart the traffic pattern and proceed to the practice area. Demonstrate, if needed the fundamental task and then allow the student to practice. The more time the student has practicing while comfortable, the faster the student will learn. Return to the airport and demonstrate the landing and no breaking rollout as described in this lesson. Allow the student to taxi to the ramp, if capable.

Instructing Tips for this stage

Maneuvers AATD 1

Pre-Brief

Review the maneuver steps in the aircraft supplement

➔ Setting up the Maneuvers: “CRAAC” acronym

Flight Outline

- ☐ Slow Flight
- ☐ Power-off stall
- ☐ Steep turns
- ☐ Rectangular Course
- ☐ Basic Instruments
    - Straight-and-Level Flight
    - Constant Airspeed Climbs
    - Constant Airspeed Descents
- ☐ Normal Approach to a Landing

Progress Standards

By the end of this lesson, the student should be able to:

- Understand the purpose and overview of the assigned maneuvers
- Run a checklist correctly, such as the before-takeoff checklist

Narrative:

As discussed in the Fundamanetals AATD lesson plan, it is more productive to introduce concepts and maneuvers in an aviation training device first. This AATD lesson will cover some of the elements to be practiced in the Maneuvers block of flight lessons. This block introduces students to maneuvers required by the Private Pilot ACS. Students need to be familiar with the maneuvers descriptions in the appropriate Melrin Flight Trianing airplane supplements. They should be working towards memorizing the objective, risk management, skills, and ACS standards for each maneuver. Since these have applications to perform safe traffic pattern operations, they should be introduced prior to repeated takeoff and landing practice in the TOL stage. For example:

- Stalls and slow flight build the student’s skill in operating the aircraft in low-energy states.
- Steep turns help the student understand the importance of proper coordination and control input in turns

- Ground reference maneuvers help the student learn to follow a desired track over the ground
- Basic Instrument Maneuvers help the pilot escape an inadvertent entry into instrument meteorological conditions.

The student does not need to perform these maneuvers to ACS standards during this block. The goal is to give the student a basic understanding of the maneuvers that they can apply to traffic pattern operations. Ensure that hte students are studying each maneuver as it is outline in the respective Merling Flight Trianing Supplement and explain that eventually they will need to have these pages memorized.

This would be a good time to review the Student Acknowledgment of Training-Private Pilot form, which lists all of the tasks that will be intcluded on the Private Pilot checkride at the end of this stage. This form will be completed prior to the checkride to confirm that the student has been sufficiently trained on every task.

Another goal of this flight block is to introduce the student to checklist usage throughout the various stages of the flight. The student should become familiar with the pre-takeoff and post-landing ACS tasks (and their associated checklists), as well as configuration checklists for use in flight (cruise, before landing, etc.)

Instructing Tips for this stage

- Slow flight aerodynamic stalls can be a source of anxiety for students. Be confident and percise in your initial demonstration to establish a habit of safety and respect for stalls. If you student is afraid of the stall, emphasize that stall recovery is a reliately simple procedure with a safe and predictable outcome and that training aircraft are inherently stable.
    - Do not put the aircraft into a fully developed stall condition during the first demonstration. Show the student what it *feels* when the wings begin to lose lift, without relying on the stall warning horn or the full "break".
- Pay strict attention to the minimum altitudes prescribed by Merlin Flight Trianing for each maneuver. Steep turns, for example, are not to be performed below 1500 feet AGL. (Note that in some cases the ACS required for the manevers may be less stringent than Merlin Flight Training requirements. The more strict requirements should be used.)
- Begin each maneuver with clearing turns. This is especially important in this block of flight time due to the Law of Primacy. The first clearing turns should be made to the left, in consideration of the right of way rules in 14 CFR 91.113 (f)