



FLIGHT INSTRUCTOR LESSON PLANS

Fourth Edition

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CFI Bootcamp
Flight Instructor Training

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Fourth Edition
By Mike Shiflett

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Mike Shiflett's Aviation credentials and experience are as follows:

FAA Certificates

Airline Transport Pilot Certificate – Airplane Multi-Engine Land. CE-525 Type rating
Commercial Pilot Privileges: Airplane Single Engine Land and Sea
Flight Instructor Certificate – Airplane Single and Multi-Engine Land, Instrument Airplane
Former FAA Designated Pilot Examiner – Recreational – ATP including Initial CFI, CFII, MEI

UK Certificates

Commercial Pilot – Airplane Single Engine Land
Former UK Flight Examiner for Private Pilot and IMC ratings

Mike has amassed over 16,000 hours of which most was in general aviation aircraft. He also administered around 3,000 practical tests (Checkrides) for the FAA.

Mike has authored numerous courses used by top flight schools and Universities in his previous company. At CFI Bootcamp he authored all the course content including 42 hours of video, 10 books used by students at CFI Bootcamp and has been featured in many aviation media organizations. He has also presented at EAA Airventure – Oshkosh, WI, Sun-n-Fun and Aviation conferences as a speaker. He also produced a Podcast "Flight Training the way I see it", and has a weekly webinar called "The Power Hour". The CFI Bootcamp website has links to the webinar and previous Podcasts.

He continues to innovate in the aviation industry and is particularly focused on creating courses and training materials to produce better flight instructors.

Mike currently lives in both San Jose, CA and more often in Miami Beach, FL. He flies from the Opa-Locka airport just north of Miami International.

Introduction

Thanks for purchasing our Lesson Plans. This is the fourth edition. The content was reviewed for errors and updated. This complete set of lesson plans can be used for teaching flight maneuvers for Sport, Recreational, Private, Commercial Pilots, and Flight Instructors. There are also lesson plans for the technical subject areas such as Aerodynamics, Runway Incursion Avoidance, etc., for Private, Recreational and Commercial students.. Most of the technical subject areas for Flight Instructor students are also included.

These lesson plans are the same ones used by CFI Bootcamp students who go through our program in Miami, FL and Palo Alto, CA. They are time tested with hundreds of students that have used them for their checkrides and for teaching students once they got their Flight Instructor Certificate.

As always, if you find any errors, please send them to info@cfibootcamp.com..

Mike Shiflett – November 9th, 2021 - Miami Beach, FL

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LESSON PLANS

The lesson plans can fit into most any training syllabus. If you don't have a training syllabus you can use ASAs or King Schools as a starting place. Both are very good.

Each flight maneuver lesson plan has an Objective, Motivation, Presentation (Elements), time for how long it should take, Key Points, 172 Maneuvers Guide, Common Errors, Questions to ask the students, Completion Standards and Risk Management. The ground lessons have an Objective, Motivation, Presentation with how long it should take, Instructor's actions, Student's Actions and references. There is also additional content behind the lesson plan that includes things like images, graphs, etc.

Note: Where a maneuver is common to both Private and Commercial pilots such as Steep Turns, the Private Pilot Knowledge Area, Risk Management and Skills (Completion Standards) are from the Private Pilot ACS. Refer to the Commercial Pilot ACS for Completion Standards for those maneuvers.

IMPORTANT: You need to teach each lesson plan out loud with a whiteboard and/or monitor. You will never know if you can teach the material in the plan until you do this. Simply reading over the lesson plans is NOT good enough. I realize this is a lot of work, but you will catch problems in your own understanding, flow issues and much more if you will take this on.

When teaching an actual student, you should teach from the lesson plan and at the end of your lesson you should ask the student to tell you how they will perform the maneuver. Demonstrating with a model airplane is very helpful. The idea is you don't want to get into the airplane until you are sure the student understands what they are going to do on that flight.

There are also lesson plans for ground instruction: All of the Technical subject areas in the Flight Instructor PTS are included. They contain the full lesson and include a lot of artwork and explanations.

I hope you find this book useful. Our instructors at CFI Boot Camp teach every day from these lesson plans, so they are field tested.

If you are working on your CFI now, consider purchasing our CFI Workbook. This book is intended to cement your knowledge by providing you with scenarios, assessment and study questions.

Thanks again for purchasing the Lesson Plans. Let us know how they work out for you.

Mike Shiflett - CFI Boot Camp Web: www.cfibootcamp.com

FLIGHT MANEUVERS LESSON PLANS FOR SPORT, RECREATIONAL, PRIVATE, COMMERCIAL PILOTS AND FLIGHT INSTRUCTORS

The following lesson plans are for teaching students pursuing the Private, Recreational, Sport and Commercial Pilot certificates.

They can be used in any order. They fit into the syllabus in the next chapter to form a complete course of training for the Private Pilot.

The lesson plans can also be used for the Flight Instructor Practical test if the flight instructor applicant personalizes them in such a way as to be able to teach from them.

Note: The Instructors Actions and Students actions are the same for all the maneuvers lessons, so they are not included on the Lesson Plans.

Instructors actions are always: Present the lesson, demonstrate the maneuver with the model airplane, and ask the student questions to assess their knowledge.

Student actions are always: Take notes on the presentation, demonstrate the maneuver to the instructor describing the key points of how to do it, and state any completion standards for

Maneuvers Lesson Plans Include:

- 1 Objective and motivation** for each maneuver. The objective describes what will be accomplished and the motivation describes why it needs to be done.
- 2 Presentation** - The Elements that should be taught in the order presented in the lesson plan. The step by step order of the lesson. Also includes the lesson
- 3 Key Points** - These are areas to place extra emphasis after the presentation has been delivered. Not every lesson has key points.
- 4 Risk Management** - In most lesson plans. These can be brought out at any point in the lesson. You may want to integrate them into the Presentation at the appropriate points, or you can teach them as separate topics at the end.
- 5 Common errors** - Included for most lesson plans. They are from the Airplane Flying Handbook and Instructor Certification Standards.
- 6 Completion Standards** and are reproductions from the Airman Certification Standards (ACS). Note: References to complex airplane standards have been removed from these lesson plans.

Sport, Recreational & Private Flight Maneuvers Lesson Plans

Objective

To perform two 180 degree climbing and descending symmetrical turns in opposite directions during which none of the flight controls are ever stationary.

Motivation

To develop precise control of pitch, bank and yaw in all combinations, and a feel for steady, constant application of the flight controls.

Presentation: 15 Minutes

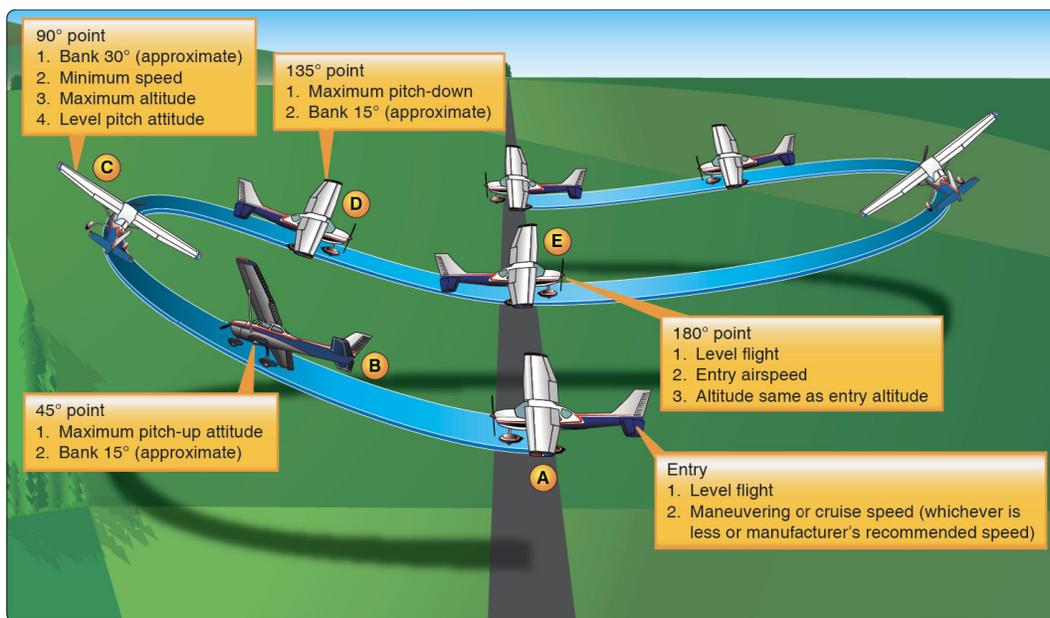
1. Demonstrate Lazy Eight with a model and diagram - Entry altitude, airspeed.
2. 45-degree point should result in 15 degrees of bank and maximum pitch.
3. 90-degree point, bank 30 degrees and pitch level with the minimum airspeed. 5 to 10 knots above stall. Most rudder is required here.
4. 135-degree bank 15 degrees and pitch attitude lowest.
5. 180 degree point the bank 0 degrees, the pitch attitude level, heading 180 degrees from entry, altitude and airspeed the same as entry.
6. Controls never stationary - Explain rudder required at each point and differences in each direction. (Left vs Right)

Key Points:

- Identify reference points at 45, 90, and 135 degrees in both turning directions.
- Control pressures always changing throughout the maneuver, never stationary.
- Be aware that more rate of pitch is required than rate of bank throughout.
- Significant difference in the rudder pressures between the right and left turns.
- The maneuver is performed with a fixed power setting.

Risk Management - Teach how to identify, assess and mitigate risks encompassing the following:

1. Dividing attention between airplane control and orientation.
2. Task management.
3. Energy management.
4. Stall/spin awareness.
5. Situational awareness.
6. Rate and radius of turn with confined area operations.
7. CFIT avoidance.
8. Visual scanning and collision avoidance.



Questions for the Student:

1. Where should the airspeed be the lowest?
2. At what point in the maneuver will the most rudder pressure be needed?
3. At what point will the flight controls be stationary?
4. What minimum entry altitude and airspeed is used for the lazy eight?
5. At what point should the pitch attitude be at the maximum?
6. At what point should the pitch attitude be level?
7. At what point should the bank angle be the greatest?

Common Errors

- Failure to adequately clear the area.
- Using the nose or top of engine cowl instead of the true longitudinal axis, resulting in unsymmetrical loops.
- Watching the airplane instead of the reference points.
- Inadequate planning, resulting in the peaks of the loops both above and below the horizon not coming in the proper place.
- Control roughness, usually caused by attempts to counteract poor planning.
- Persistent gain or loss of altitude with the completion of each eight.
- Attempting to perform the maneuver rhythmically, resulting in poor pattern symmetry.
- Allowing the airplane to “fall” out of the tops of the loops rather than flying the airplane through the maneuver.
- Slipping and/or skidding.

Completion Standards

1. Select an altitude that will allow the task to be performed no lower than 1,500 feet AGL.
2. Establish the recommended entry configuration, power, and airspeed.
3. Maintain coordinated flight throughout the maneuver.
4. Achieve the following throughout the maneuver:
 - a. approximately 30° bank at the steepest point.
 - b. constant change of pitch and roll rate and airspeed.
 - c. altitude tolerance at 180° point, ± 100 feet from entry altitude.
 - d. airspeed tolerance at the 180° point, plus ± 10 knots from entry airspeed.
 - e. heading tolerance at the 180° point, $\pm 10^\circ$.
6. Continue the maneuver through the number of symmetrical loops specified and resume straight-and-level flight.

Objective

To recognize situations that lead to an accelerated stall, and how to recover from this condition.

Motivation

A developed awareness of stalls in any attitude, configuration, or airspeed will prevent errors in handling the airplane, particularly at low altitudes.

Presentation: 15 Minutes

1. Relating the maneuver to a realistic flight conditions that could cause this stall.
2. Aerodynamics associated with accelerated stalls and spins in various attitudes including load factor and the increase in stall speed.
3. Minimum 3000 - ft AGL throughout maneuver.
4. Procedure to induce an accelerated stall - Below V_a , bank 45 degrees, maintain level flight momentarily, power idle, smoothly firmly and progressively increase the AOA elevator until a stall occurs.
5. Approach to stall indications - Accelerated indications happen quickly
6. Full stall indications - Uncommanded pitch down - potential spin entry
7. Efficient stall recovery procedure so that a minimum loss of altitude occurs. Reduce angle of attack until no buffeting or stall warning apparent, apply full power and level the wings

Key Points:

- Pitching/rolling actions tend to be more sudden than in other stalls.
- A stall will occur at a higher airspeed if the load factor is increased.
- Perform this maneuver with no flaps.

Risk Management - Teach how to identify, assess and mitigate risks encompassing the following:

1. Dynamic aerodynamic relationship between angle of attack, airspeed, load factor, aircraft configuration, aircraft weight, and aircraft attitude.
2. Reliance on aircraft performance indications such as aircraft buffet instead of artificial warning systems such as stall horn.
3. Required actions for aircraft maximum performance and the consequences of failing to do so.
4. Scenarios during which an accelerated stall can occur.
5. Inadvertent stall/spin entry.

