

# Commercial Pilot Flight Instruction Lesson Plan

## Chandelles / Lazy 8s

Student: \_\_\_\_\_ Date: \_\_\_\_\_

### Objectives:

Upon completion of this lesson, the student will be able:

- Be able to perform chandelles to the right or left.
- Be able to perform lazy 8s.
- Continue to develop situational awareness and division of attention skills.

### Elements:

- Chandelles
- Lazy 8s
- Smooth airplane control
- Coordination
- Situational Awareness/Division of Attention

### Schedule:

- |  |       |
|--|-------|
| • Pre-lesson briefing                    | 00:10 |
| • Pre-Flight and flight to practice area | 00:15 |
| • Chandelles                             | 00:15 |
| • Lazy 8s                                | 00:15 |
| • Flight back to airport                 | 00:10 |
| • Post-flight procedures                 | 00:10 |
| • Post-lesson debriefing                 | 00:15 |

Total: 01:30

### Equipment:

- Chalkboard or paper and pencil
- Model airplane to explain maneuvers
- Sick Sacks

### Instructor Actions:

1. Pre-lesson briefing
  - Present lesson objective.
  - Describe what will take place during the lesson.
  - Explain chandelles and demonstrate with model airplane.
  - Explain lazy 8s and demonstrate with model airplane.
2. Pre-flight and flight to practice area
  - Use the opportunity to reinforce the student's general flying skills. Review any operational areas which the student might be having difficulty with.
  - Go over procedures for chandelles and lazy 8s again.
  - Answer any questions student may have.

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3. Chandelles
  - Demonstrate and explain the maneuver with student following on controls.
  - Have student perform the maneuver to both left and right.
4. Lazy 8s
  - Demonstrate and explain the maneuver with student following on controls.
  - Have student perform the maneuver to both left and right.
5. Return flight
  - Observe student's use of techniques already learned during flight.
  - Answer student's questions about the lesson.
6. Post-flight
7. Post Lesson Debriefing
  - Critique students performance of maneuvers with constructive suggestions to improve technique.
  - Answer student questions
  - Ask student questions to evaluate what was learned.
  - Explain what will be covered in the next lesson and assign reading material.

### Student Actions:

1. Pre-lesson briefing
  - Ask questions concerning previous lessons and/or this one.
2. Pre-flight and flight to practice area
  - Perform pre-flight and pre-takeoff procedures using appropriate checklists
  - Takeoff and fly to practice area on headings (+/- 10<sup>0</sup>) and at altitudes (+/- 100 ft.) specified by the instructor.
3. Chandelles
  - Select an entry altitude > 1,500 AGL.
  - Perform clearing turns prior to starting the maneuver.
  - Establish airspeed as recommended by the airplane manufacturer not to exceed V<sub>A</sub>.
  - Establishes the initial bank not to exceed 30<sup>0</sup>.
  - Apply power and pitch to maintain a coordinated constant bank climbing turn to the 90<sup>0</sup> point.
  - Perform a coordinated constant rate rollout with constant pitch to the 180<sup>0</sup> point.
  - Rolls out of the maneuver within +/- 10<sup>0</sup> of the desired heading (reciprocal of the entry heading) and at an airspeed of no more than 5 Knots above stall speed.
  - Reduce pitch attitude to maintain straight and level flight at the new altitude +/- 50 feet.

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4. Lazy 8s
  - Select an entry altitude > 1,500 AGL.
  - Perform clearing turns prior to starting the maneuver.
  - Establishes the entry speed recommended by the airplane manufacturer or  $V_A$ .
  - Select a prominent reference point.
  - Perform the maneuver with constantly changing pitch, bank and turn rate.
    - $15^\circ$  bank and maximum pitch up at the  $45^\circ$  point.
    - $30^\circ$  bank and level pitch attitude at the  $90^\circ$  points; altitude and airspeed +/- 100 feet and +/- 10 Knots.
    - $15^\circ$  bank and maximum pitch down at the  $135^\circ$  point
    - Level attitude at the  $180^\circ$  points; altitude and airspeed +/- 100 feet and +/- 10 Knots of entry altitude and airspeed.
    - Heading tolerance +/-  $10^\circ$  at the  $180^\circ$  points.
  - Perform the maneuver starting both to the left and the right.
5. Return flight
  - Navigate from practice area back to airport.
6. Post-flight procedures
  - Perform post-flight procedures using appropriate checklists.
7. Post-flight debriefing.
  - Ask questions about the lesson.

### Completion Standards:

This lesson will be completed when the student is able to perform chandelles and lazy 8s within the tolerances specified in the *Student Actions* section.

### Common Errors:

- Chandelles
  - Pitching up too much so that stall speed is reached before reaching the end of the turn.
  - Improper coordination; Doing left turns may require right rudder.
  - Rolling wings-level before reaching the  $180^\circ$  point.
  - Not holding constant pitch through the second half of the maneuver.
  - Fixating on the instruments.
- Lazy 8s
  - Entering the maneuver above  $V_A$  or the manufacturer's recommend airspeed.
  - Coordination, particularly in left hand turns, which might require right rudder.
  - Not hitting the proper airspeed/altitude at the  $180^\circ$  points due to improper control inputs.
  - Excessive bank at the tops; no more than  $30^\circ$  according to the FTH.
  - Fixating on the instruments.

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### References:

- POH/AFM for the airplane used.
- Airplane Flying Handbook (FAA-H-8083-3A); Pages 9-4 – 9-8.
- COMMERCIAL PILOT – ASEL PTS Area of Operation V Tasks C and D.

### Possible Review Questions:

$V_A$  is the airplane's \_\_\_\_\_. What is it for the airplane (being used)? Why is it important?

The first  $90^\circ$  of the chandelle can best be characterized by \_\_\_\_\_ bank and \_\_\_\_\_ pitch.

The second  $90^\circ$  of the chandelle can best be characterized by \_\_\_\_\_ bank and \_\_\_\_\_ pitch.

When performing a lazy 8, the maximum pitch occurs at the \_\_\_\_\_ degree point in the maneuver.

When performing the lazy 8, the maximum bank occurs at the \_\_\_\_\_ degree point in the maneuver.