

Instrument Pilot Flight Instruction Lesson Plan

Intercepting and Tracking DME Arcs

Student: _____ Date: _____

Objectives:

Upon completion of this lesson, the student will:

- Be able to intercept and track specified DME arcs, both to the left and right.
- Be able to determine the aircraft's position relative to the VOR/DME or VORTAC facility.
- Be able to positively identify a VOR station and determine whether or not it is operational.

Elements:

- Use of VOR receiver, OBS (or HSI).
- Use of DME.
- Wind drift correction.

Schedule:

- | | |
|---|-------|
| • Pre-lesson briefing | 00:10 |
| • Pre-Flight | 00:10 |
| • Practice intercepting and tracking DME arcs | 01:00 |
| • Post-lesson debriefing | 00:10 |
| Total: | 01:30 |

Equipment:

- IFR Capable airplane (with one or more VOR receivers and DME).
- View limiting device
- Appropriate departure procedure, en-route, STAR and approach charts.

Instructor Actions:

1. Pre-lesson briefing
 - Present lesson objective.
 - Describe what will take place during the lesson.
 - Review operation of the VOR and DME.
 - Review DME slant range errors near the station.
 - Describe procedure for intercepting the arc.
 - Describe procedures for applying proper wind correction and maintaining the arc.
 - Describe how to identify the airplane's location (or an intersection) using a VOR radial and DME.
 - Review requirement for 30 day VOR checks and how to log them.

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2. Pre-flight
 - Observe that the student performs the proper preflight checks of the instruments, navigation equipment and airplane systems appropriate for an IFR flight.
 - Observe that the student determines when the last VOR check was performed on the airplane and determines whether it was within the last 30 days. If not, have the student perform the check.
 - Use the opportunity to practice the student's general instrument flying skills. With the student wearing the view limiting device, give him or her instructions to fly various headings, perform standard rate turns, climbs and descents, etc.
3. Practice intercepting and tracking DME arcs.
 - Upon departure from the airport have student fly direct to a nearby VOR/DME or VORTAC facility.
 - Observe that the student follows the correct procedure for identifying the VOR and determining that it is operational.
 - Correct any errors that the student may be making, such as chasing the CDI or not applying proper wind correction.
 - Have the student intercept and track various DME arcs around the VOR.
 - Observe that the student intercepts the arc properly.
 - Observe that the student applies proper wind correction.
 - Coach the student as necessary in techniques for maintaining the arc.
 - Have the student identify the airplane's position by use of VOR radial and DME reading.
 - Have the student fly to and identify passage of an intersection on an airway (or make one up, if there are no real ones conveniently located) using a VOR radial and DME reading.
4. Post Lesson Debriefing
 - Critique student's 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
 - The student performs the proper preflight checks of the instruments, navigation equipment and airplane systems appropriate for an IFR flight.

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3. Practice intercepting and tracking DME arcs.
 - Upon departure from the airport the student will fly direct to a nearby VOR/DME or VORTAC facility.
 - Student follows the correct procedure for identifying the VOR and determining that it is operational.
 - Student will intercept and track various DME arcs around the VOR.
 - The student intercepts the arc properly.
 - The student applies proper wind correction.
 - The student will identify the airplane's position by use of VOR radial and DME reading.
 - The student will fly to and identify passage of an intersection on an airway (or one made up by the instructor, if there are no real ones conveniently located) using a VOR radial and DME reading.
4. Post-flight debriefing.
 - Ask questions about the lesson.

Completion Standards:

This lesson will be completed when the student is able to:

- Intercept and maintain a DME arc around a VOR/DME or VORTAC facility within 1 nautical mile.
- Identify the airplane's position (or an intersection) using VOR radials and DME readings.

Common Errors:

- Failure to properly identify the VOR and determine whether or not it is operational.
- Failure to apply proper wind correction while tracking the arc.
- TO/FROM confusion.

References:

- Instrument Flying Handbook (FAA-H-8083-15); 7-13 – 7-17,
- Instrument Procedure Handbook (FAA-H-8261-1A); 5-38
- Instrument PTS Area of Operation V Task A.

Possible Review Questions: