EO M331.01 – DESCRIBE AIRCRAFT STABILITY

1. **Performance.** Describe Aircraft Stability.

2. **Conditions**

   a. Given:

      (1) Supervision, and

      (2) Assistance as required.

   b. Denied: N/A.

   c. Environmental: Classroom or training area large enough to accommodate the entire group.

3. **Standard.** The cadet shall describe:

   a. characteristics of stability;

   b. stability around the axes of rotation; and

   c. features of the aircraft that provide stability.

4. **Teaching Points**

TP	Description	Method	Time	Ref
TP1	Demonstrate the characteristics of stability, to include: a. the contrasts between static and dynamic stability, b. positive stability, c. neutral stability, and d. negative stability.	In-Class Activity	15 min	C3-116 (p. 31, p. 32) C3-229 (pp. 57–99)
TP2	Review the axes of an aircraft, to include: a. the longitudinal axis and roll, b. the lateral axis and pitch, and c. the normal (vertical) axis and yaw.	Interactive Lecture	10 min	C3-116 (p. 30)
TP3	Explain longitudinal stability, to include: a. the effects of the horizontal stabilizer, and b. the effects of the centre of gravity.	Interactive Lecture	10 min	C3-116 (p. 31, p. 32) C3-229 (pp. 57–99)
TP4	Explain lateral stability, to include: a. the effects of dihedral and anhedral, b. the effects of sweepback, and c. keel effect.	Interactive Lecture	10 min	C3-116 (pp. 31–32) C3-229 (pp. 57–100)
TP5	Explain directional stability and the effects of the fin.	Interactive Lecture	5 min	C3-116 (pp. 31–32)

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TP	Description	Method	Time	Ref
				C3-229 (pp. 57-99)

5. **Time**

a.	Introduction/Conclusion:	10 min
b.	In-Class Activity:	15 min
c.	Interactive Lecture:	35 min
d.	Total:	60 min

6. **Substantiation**

a. An in-class activity was chosen for TP 1 as it is an interactive way to introduce aircraft stability.

b. An interactive lecture was chosen for TPs 2–5 to review axes of rotation and introduce stability about the axes.

7. **References**

a. C3-116 (ISBN 0-9680390-5-7) MacDonald, A. F., & Peppler, I. L. (2000). *From the Ground Up: Millennium Edition*. Ottawa, ON: Aviation Publishers Co. Limited.

b. C3-229 (ISBN 0-521-02128-6) Abzug, M. J., & Larrabee, E. E. (2002). *Airplane Stability and Control* (Second Edition). Cambridge, UK: Cambridge University Press.

8. **Training Aids**

a. Presentation aids (eg, whiteboard/flip chart/OHP) appropriate for the classroom/training area,

b. Model airplane illustrating the three axes,

c. Tennis ball,

d. Three marbles,

e. Table,

f. Tape, and

g. Two bowls.

9. **Learning Aids**

a. Tennis ball,

b. Three marbles,

c. Two bowls,

d. Table, and

e. Tape.

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10. **Test Details.** This EO is assessed IAW Chapter 3, Annex B, Appendix 5, (Aviation Subjects – Combined Assessment PC).

11. **Remarks**

    a. If EO C331.01 (Review Principles of Flight) is chosen as a complementary period, it should be scheduled prior to EO M331.01 (Describe Aircraft Stability).

    b. When developing activities for the mandatory familiarization flying/elemental training day, it is recommended that the cadet be given the opportunity to identify and describe the stability of the aircraft.

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