EO C440.10 – DISCUSS KINETIC AND POTENTIAL ENERGY

1. **Performance**: Discuss Kinetic and Potential Energy
2. **Conditions**:
   a. Given:
      (1) Supervision, and
      (2) Assistance as required.
   b. Denied: Nil.
   c. Environmental: Classroom or training area large enough to accommodate the entire group.
3. **Standard**: The cadet shall discuss kinetic and potential energy, to include:
   a. storage and conversion of energy, to include:
      (1) gravitational potential energy, and
      (2) elastic potential energy; and
   b. expenditure of energy, to include the effects of:
      (1) velocity, and
      (2) mass.
4. **Teaching Points**:

TP	Description	Method	Time	Refs
TP1	Explore the storage and conversion of kinetic and potential energy in a gravitational system.	In-Class Activity	5 min	C3-262
TP2	Explore the storage and conversion of kinetic and potential energy in an elastic system.	In-Class Activity	5 min	C3-262
TP3	Explore the effects of velocity and mass in the expenditure of energy.	In-Class Activity	15 min	C3-263

5. **Time**:

a.	Introduction / Conclusion:	5 min
b.	In-Class Activity:	25 min
c.	Total:	30 min

6. **Substantiation**: An in-class activity was chosen for this lesson as it is an interactive way to provoke thought about energy and stimulate interest in kinetic and potential energy among cadets.
7. **References**:
   a. C3-262 Canadian Space Agency. (2003). *Orbital mechanics: Energy*. Retrieved September 30, 2008, from http://www.space.gc.ca/eng/educators/resources/orbital/energy.asp
   b. C3-263 EG-1997-10-116-HQ NASA. (1997). *Exploring the moon: A teacher's guide with activities*. Retrieved September 30, 2008, from http://lunar.arc.nasa.gov/education/pdf/expmoon.pdf

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8. **Training Aids**:
    a. Elastic bands,
    b. Yo-yos,
    c. Plastic tub approximately 7.5 cm deep, 25 cm wide and 30 cm long,
    d. Sand (1 / 2 tub),
    e. Cornstarch (1 / 2 tub),
    f. Ruler marked in millimetres, and
    g. Impacters, to include:
        (1) marbles of various sizes,
        (2) ball bearings of various sizes,
        (3) wooden balls of various sizes, and
        (4) golf balls.
9. **Learning Aids**:
    a. Elastic bands, and
    b. Yo-yo.
10. **Test Details**: Nil.
11. **Remarks**: Cadets who are qualified Advanced Aerospace may assist with this instruction.

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