

**CHAPTER 4**  
**PERFORMANCE OBJECTIVES**

**PO 400**

1. **Performance:** Participate in *Positive Social Relations for Youth Training*
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:** IAW A-CR-CCP-915/PG-001, *Positive Social Relations for Youth Training Facilitator's Package*, the cadet will participate in Module 2—Influencing Positive Social Relations.
4. **Remarks:** Nil.

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**CITIZENSHIP**

**1. PO X01 – Participate in Citizenship Activities**

This PO and its associated EOs are located in A-CR-CCP-801/PG-001, *Royal Canadian Air Cadets Proficiency Level One Qualification Standard and Plan*.

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**COMMUNITY SERVICE**

**1. PO X02 – Perform Community Service**

This PO and its associated EOs are located in A-CR-CCP-801/PG-001, *Royal Canadian Air Cadets Proficiency Level One Qualification Standard and Plan*.

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**PO 403**

1. **Performance:** Act as a Team Leader
2. **Conditions:**
  - a. Given:
    - (1) Supervision, and
    - (2) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Any.
3. **Standard:** The cadet will act as a team leader, to include:
  - a. striving to meet the needs and expectations of team members;
  - b. employing a leadership approach;
  - c. motivating team members;
  - d. providing feedback to team members;
  - e. participating in a mentoring relationship; and
  - f. leading a team during a leadership appointment, to include:
    - (1) setting a positive example;
    - (2) fostering teamwork by contributing to positive team dynamics;
    - (3) communicating clearly the task(s) to be accomplished;
    - (4) supervising cadets;
    - (5) solving problems, as required;
    - (6) debriefing the team; and
    - (7) reporting to superiors.
4. **Remarks:** Nil.
5. **Complementary Material:**
  - a. Complementary material associated with PO 403 is designed to enhance the cadet's ability to act as a team leader, specifically:
    - (1) EO C403.01 (Participate in a Leadership Seminar); and
  - b. Some complementary training offered in previous levels may be selected as complementary training in Proficiency Level Four, specifically:
    - (1) EO C303.01 (Lead a Team Building Activity), and
    - (2) EO C303.02 (Deliver a Presentation About a Leader).

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**EO M403.01**

1. **Performance:** Describe Needs and Expectations of Team Members
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 describe:
  - a. the needs of team members, and
  - b. the expectations that a team member has of a team leader.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Describe the needs of team members, to include: <ol style="list-style-type: none"> <li>a. acceptance of and by other team members,</li> <li>b. acceptance and understanding of leaders,</li> <li>c. approval of leaders, and</li> <li>d. opportunities to try different tasks and roles.</li> </ol>	Interactive Lecture	5 min	C0-115 (pp. 12–13)
TP2	Conduct an activity where cadets describe the expectations that a team member has of a team leader, to include: <ol style="list-style-type: none"> <li>a. good leadership, to include:               <ol style="list-style-type: none"> <li>(1) leading by example;</li> <li>(2) putting the needs of the team members first; and</li> <li>(3) being sensitive to cultural and gender differences;</li> </ol> </li> <li>b. effective communication, to include:               <ol style="list-style-type: none"> <li>(1) giving information on what is expected of them;</li> <li>(2) explaining changes in situations;</li> <li>(3) asking for assistance with tasks; and</li> <li>(4) providing concrete examples during explanations; and</li> </ol> </li> </ol>	In-Class Activity	10 min	A0-047 A0-048 A0-131 (pp. 4-8 to 4-14) C0-115 (p. 12, 177-183)

TP	Description	Method	Time	Refs
	c. effective supervision, to include: (1) operating in a safe environment; (2) freedom from over-supervision; and (3) recognition of good performance.			
TP3	Conduct a group discussion on how a team leader should strive to meet the needs and expectations of team members.	Group Discussion	10 min	

5. **Time:**

- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 5 min  |
| b. | Interactive Lecture:       | 5 min  |
| c. | In-Class Activity:         | 10 min |
| d. | Group Discussion:          | 10 min |
| e. | Total:                     | 30 min |

6. **Substantiation:**

- An interactive lecture was chosen for TP 1 to orient the cadets to team members' needs.
- An in-class activity was chosen for TP 2 as it is an interactive way to provoke thought and stimulate interest among cadets about expectations that a team member has of a team leader.
- A group discussion was chosen for TP 3 as it allows the cadets to interact with their peers and share their knowledge, experiences, opinions and feelings about how a team leader should strive to meet team members needs and expectations.

7. **References:**

- A0-047 A-PA-005-000/AP-004 Canadian Defence Academy–Canadian Forces Leadership Institute. (2005). *Leadership in the CF conceptual foundations*. Ottawa, ON: Department of National Defence.
- A0-048 A-PA-005-000/AP-003 Canadian Defence Academy–Canadian Forces Leadership Institute. (2005). *Leadership in the CF doctrine foundations*. Ottawa, ON: Department of National Defence.
- A0-131 A-CR-CCP-910/PT-001 Director Cadets 6. (1989). *Training school leadership*. Ottawa, ON: Department of National Defence.
- C0-115 ISBN 0-7879-4059-3 van Linden, J. A., & Fertman, C. I. (1998). *Youth leadership*. San Francisco, CA: Jossey-Bass Inc., Publishers.

8. **Training Aids:** Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area.

9. **Learning Aids:** Needs and Expectations of Team Members handout.

10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, 403 PC.

11. **Remarks:** Nil.

**EO M403.02**

1. **Performance:** Select a Leadership Approach
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 select a leadership approach during:
  - a. a leadership assignment, and
  - b. a leadership appointment.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Describe transactional and transformational leadership.	Interactive Lecture	5 min	C0-115 (pp. 8–10) C0-410
TP2	Describe the outcomes that occur as a result of the team leader focussing on the team members and the goal.	Interactive Lecture	10 min	C0-413
TP3	Describe leadership approaches, to include: <ol style="list-style-type: none"> <li>a. the key aspects of each approach, to include:               <ol style="list-style-type: none"> <li>(1) control,</li> <li>(2) coach, and</li> <li>(3) empower; and</li> </ol> </li> <li>b. selecting an approach based on the:               <ol style="list-style-type: none"> <li>(1) simplicity of the task,</li> <li>(2) safety of the cadets,</li> <li>(3) capability of the cadets, and</li> <li>(4) motivation of the cadets.</li> </ol> </li> </ol>	Interactive Lecture	15 min	
TP4	Conduct an activity where the cadets will explain what leadership approach they would select and why for a given scenario.	In-Class Activity	20 min	

5. **Time:**

- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 10 min |
| b. | Interactive Lecture:       | 30 min |
| c. | In-Class Activity:         | 20 min |
| d. | Total:                     | 60 min |

6. **Substantiation:**

- a. An interactive lecture was chosen for TPs 1, 2 and 3 to review, clarify, emphasize and summarize transactional and transformational leadership, the outcomes of a team leader's focus and leadership approaches.
- b. An in-class activity was chosen for TP 4 as it is an interactive way to provoke thought and stimulate interest among cadets.

7. **References:**

- a. C0-115 ISBN 0-7879-4059-3 van Linden, J. A., & Fertman, C. I. (1998). *Youth leadership*. San Francisco, CA: Jossey-Bass Inc., Publishers.
- b. C0-410 The ASPIRA Association. (2009). *Module #5: Defining leadership styles*. Retrieved on February 12, 2009, from [http://www.aspira.org/files/documents/youthdev08/U\\_V\\_M\\_5\\_dls.pdf](http://www.aspira.org/files/documents/youthdev08/U_V_M_5_dls.pdf)
- c. C0-413 University of Arkansas, Division of Agriculture, Cooperative Extension Service. (2006). *4-H volunteer leaders' series: The enabler—A leadership style*. Retrieved February 18, 2009, from [http://www.uaex.edu/other\\_areas/publications/PDF/4HCD2.pdf](http://www.uaex.edu/other_areas/publications/PDF/4HCD2.pdf)

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area, and
- b. Scenarios.

9. **Learning Aids:** Scenarios.

10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, 403 PC.

11. **Remarks:** Cadets will select leadership approaches during leadership assignments and leadership appointments throughout the training year.



**EO M403.03**

1. **Performance:** Motivate Team Members
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 describe how to motivate team members by:
  - a. recognizing extrinsic and intrinsic motivation;
  - b. encouraging development of knowledge and skills; and
  - c. recognizing cadets for the effort they put toward a task.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Conduct an in-class activity where the cadets will explain to each other the advantages and disadvantages of extrinsic and intrinsic motivators.	In-Class Activity	20 min	C0-245 (pp. 30–35) C0-414 C0-415
TP2	Explain why team leaders should encourage intrinsic motivation.	Interactive Lecture	5 min	C0-401 (pp. 55–58)
TP3	Conduct a group discussion about when and how team leaders motivate team members, to include: <ol style="list-style-type: none"> <li>a. praising effort and perseverance during a task;</li> <li>b. praising the use of different strategies during a task;</li> <li>c. praising improvement during a task;</li> <li>d. encouraging the development of knowledge and skills;</li> <li>e. praising the completion of a task;</li> <li>f. thanking team members for their endeavours; and</li> <li>g. giving credit for the completion of tasks to the team rather than yourself.</li> </ol>	Group Discussion	25 min	C0-411

5. **Time:**

- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 10 min |
| b. | In-Class Activity:         | 20 min |
| c. | Interactive Lecture:       | 5 min  |
| d. | Group Discussion:          | 25 min |
| e. | Total:                     | 60 min |

6. **Substantiation:**

- a. An in-class activity was chosen for TP 1 as it is an interactive way to provoke thought and stimulate interest among cadets about advantages and disadvantages of extrinsic and intrinsic motivators.
- b. An interactive lecture was chosen for TP 2 to orient the cadets to encourage intrinsic motivation.
- c. A group discussion was chosen for TP 3 as it allows the cadets to interact with their peers and share their knowledge, experiences, opinions and feelings about when and how to motivate team members.

7. **References:**

- a. C0-245 ISBN 1-58062-513-4 Adams, B. (2001). *The everything leadership book*. Avon, MA: Adams Media.
- b. C0-401 ISBN 0-7879-6068-3 Hesselbein, F., & Johnston, R. (2002). *A leader to leader guide: On mission and leadership*. San Francisco, CA: Jossey-Bass Publishing.
- c. C0-411 Dweck, C. S. (2007). The perils and promises of praise. *Education Leadership*, 65(2), 34-39.
- d. C0-414 Bainbridge, C. (2009). About.com: Gifted children. *Extrinsic Motivation*. Retrieved on February 26, 2009, from <http://giftedkids.about.com/od/glossary/g/extrinsic.htm>
- e. C0-415 Bainbridge, C. (2009). About.com: Gifted children. *Intrinsic Motivation*. Retrieved on February 26, 2009, from <http://giftedkids.about.com/od/glossary/g/intrinsic.htm>

8. **Training Aids:** Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area.

9. **Learning Aids:** Extrinsic and Intrinsic Motivation handouts.

10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, 403 PC.

11. **Remarks:** Nil.

**EO M403.04**

1. **Performance:** Provide Feedback to Team Members
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:
  - a. recognize when feedback must be provided; and
  - b. provide feedback.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Have the cadets brainstorm and prepare a list of times when feedback should be provided.	In-Class Activity	5 min	C0-258
TP2	Explain the principles of effective feedback, to include: <ol style="list-style-type: none"> <li>a. frequent,</li> <li>b. accurate,</li> <li>c. specific, and</li> <li>d. timely.</li> </ol>	Interactive Lecture	10 min	C0-412 (pp. 3–10, pp. 111–113)
TP3	Explain the ground rules for providing feedback, to include: <ol style="list-style-type: none"> <li>a. focusing on what is observed;</li> <li>b. focusing on behaviour;</li> <li>c. keeping it neutral;</li> <li>d. using it to inform;</li> <li>e. making it supportive; and</li> <li>f. keeping it simple.</li> </ol>	Interactive Lecture	10 min	C0-403 (pp. 11–15, pp. 111–116)
TP4	Explain the steps for providing feedback, to include: <ol style="list-style-type: none"> <li>a. planning what to say;</li> <li>b. providing examples of behaviours;</li> <li>c. allowing time for feedback;</li> </ol>	Interactive Lecture	10 min	C0-404

TP	Description	Method	Time	Refs
	d. motivating; and e. setting a timeline for action and follow-up. Explain the steps for receiving feedback, to include: a. seeing each feedback session as a learning opportunity; b. actively listening to the sender's ideas; c. asking for more information if the ideas are not understood; d. being honest about how the feedback is affecting one's emotions; and e. remaining open-minded about future learning opportunities.			
TP5	Using scenarios, have the cadets practice providing feedback to team members.	In-Class Activity	15 min	

5. **Time:**

- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 10 min |
| b. | In-Class Activity:         | 20 min |
| c. | Interactive Lecture:       | 30 min |
| d. | Total:                     | 60 min |

6. **Substantiation:**

- An in-class activity was chosen for TPs 1 and 5 as an interactive way to provoke thought, and to stimulate an interest among cadets about feedback.
- An interactive lecture was chosen for TPs 2–4 to orient the cadets to giving effective feedback.

7. **References:**

- C0-258 ISBN 978-1-59869-450-5 Nigro, N. (2008). *The everything coaching and mentoring book*. (2nd ed.). Avon, MA: F+W Publications Company.
- C0-403 Peeling, G. (2000). *Feedback techniques: 7 things to know about giving feedback: Trainers Guide*. Cambridgeshire, England: Fenman Limited.
- C0-404 Mochal, T. (2006). *Follow these six steps when providing constructive performance feedback*. Retrieved February 5, 2009, from [http://articles.techrepublic.com.com/5100-10878\\_11-6102736.html](http://articles.techrepublic.com.com/5100-10878_11-6102736.html)
- C0-412 ISBN 978-0-87425-495-2 Tulgan, B. (1999). *Fast feedback* (2nd ed). Amherst, MA: HRD Press, Inc.

8. **Training Aids:**
  - a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area, and
  - b. Scenarios.
9. **Learning Aids:**
  - a. Effective Feedback handout, and
  - b. Scenarios.
10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, 403 PC.
11. **Remarks:** Nil.

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**EO M403.05**

1. **Performance:** Participate in a Mentoring Relationship
2. **Conditions:**
  - a. Given:
    - (1) Scenario,
    - (2) Supervision, and
    - (3) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Classroom or training area large enough to accommodate the entire group.
3. **Standard:** The cadet shall participate in a mentoring relationship by:
  - a. providing feedback and coaching to junior cadets; and
  - b. receiving feedback and coaching from senior cadets or staff.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Review the mentoring relationship, to include: <ol style="list-style-type: none"> <li>a. recognizing the purpose of a mentoring relationship;</li> <li>b. identifying the benefits of participating in a mentoring relationship;</li> <li>c. contributing to a mentoring match;</li> <li>d. being open to new things;</li> <li>e. being responsive to suggestions and constructive criticism;</li> <li>f. providing feedback to the mentor;</li> <li>g. learning from the mentor's example;</li> <li>h. participating in mentoring activities; and</li> <li>i. appreciating the mentoring relationship.</li> </ol>	Interactive Lecture	5 min	C0-258 (pp. 15–21, 37–48, 70–73)
TP2	Discuss the difference between formal and informal mentoring.	Group Discussion	5 min	C0-258 (p. 20, p. 64, pp. 78–79, 174–178, 182–187) C0-405 (pp. 9–18, 59–87)

TP	Description	Method	Time	Refs
TP3	Describe the steps of a formal mentoring session, to include: a. getting acquainted; b. setting goals; c. meeting goals and expectations; and d. concluding the mentoring session.	Interactive Lecture	10 min	C0-258 (pp. 260–265)
TP4	Demonstrate and explain a mentoring session, to include: a. keeping the mentoring relationship professional; b. keeping the conversation during the mentoring session in confidence; and c. using the ground rules for feedback during a mentoring session.	Demonstration	10 min	C0-258 (pp. 260–265) C0-324 (pp. 21–26, p. 31, p. 32)
TP5	Have the cadets role-play a mentoring session based on two given scenarios. Cadets will role-play the mentor in one scenario, and the cadet being mentored in another scenario.	Role-Play	20 min	C0-258 (pp. 260–265) C0-324 (pp. 21–26, p. 31, p. 32)

5. **Time:**

a.	Introduction / Conclusion:	10 min
b.	Interactive Lecture:	15 min
c.	Group Discussion:	5 min
d.	Demonstration:	10 min
e.	Role-Play:	20 min
f.	Total:	60 min

6. **Substantiation:**

- An interactive lecture was chosen for TPs 1 and 3 to review the mentoring relationship and to orient the cadets to the steps in a mentoring session.
- A group discussion was chosen for TP 2 as it allows the cadets to interact with their peers and share knowledge, experiences, opinions and feeling about formal and informal mentoring.
- A demonstration was chosen for TP 4 as it allows the instructor to explain and demonstrate a mentoring session.
- A role-play was chosen for TP 5 as it provides the cadets an opportunity to view and then conduct a mentoring session under supervision.



7. **References:**

- a. C0-258 ISBN 978-1-59869-450-5 Nigro, N. (2008). *The everything coaching and mentoring book*. (2nd ed.). Avon, MA: F+W Publications Company.
- b. C0-324 Taylor, J. S. (2003). *Training new mentees: A manual for preparing youth in mentoring programs*. USA: The National Mentoring Center.
- c. C0-405 ISBN 0-7879-6294-5 Rhodes, J. (2002). *New directions for youth development: A critical view of youth mentoring*. New York, NY: Jossey-Bass.

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area, and
- b. Scenarios.

9. **Learning Aids:** Scenarios.10. **Test Details:** Nil.11. **Remarks:** Cadets will have opportunities to participate in formal and informal mentoring relationships through the training year. A cadet in Proficiency Level Four is in a position to both mentor a subordinate cadet and be mentored by a more senior cadet and / or adult staff member.

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**EO M403.06**

1. **Performance:** Act as a Team Leader During a Leadership Appointment
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 act as a team leader during a leadership appointment by:
  - a. preparing for the leadership appointment;
  - b. carrying out the tasks associated with the leadership appointment;
  - c. giving feedback to the team; and
  - d. meeting with the activity manager to discuss the outcomes of the leadership appointment.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Describe a leadership assignment and a leadership appointment.	Interactive Lecture	5 min	
TP2	Describe the leadership appointments that may be assigned at the squadron.	Interactive Lecture	5 min	
TP3	Describe how to conduct the leadership appointment, to include: <ol style="list-style-type: none"> <li>a. preparing for the leadership appointment, to include:               <ol style="list-style-type: none"> <li>(1) ensuring the required resources are available;</li> <li>(2) completing a time appreciation; and</li> <li>(3) making a plan;</li> </ol> </li> <li>b. briefing the team members during the leadership appointment, to include:               <ol style="list-style-type: none"> <li>(1) communicating the overall plan;</li> <li>(2) communicating the tasks involved in the leadership appointment;</li> <li>(3) assigning tasks to team members as applicable; and</li> <li>(4) ensuring the team members understand their tasks;</li> </ol> </li> </ol>	Interactive Lecture	15 min	C0-114 (p. 16, p. 36, p. 99) C0-243 C0-245 (pp. 70–71) C0-247 (pp. 133–136) C0-248 (p. 20, p. 21) C0-253 (p. 24) C0-254 (p. 34, p. 35) C0-255 (pp. 86–89) C0-256 (p. 54, p. 55)

TP	Description	Method	Time	Refs
	c. carrying out the tasks associated with the leadership appointment, to include: <ul style="list-style-type: none"> <li>(1) supervising team members;</li> <li>(2) ensuring the tasks within the appointment are progressing according to the time allotted;</li> <li>(3) providing feedback to the team members throughout the appointment; and</li> <li>(4) modifying the plan as required;</li> </ul> d. providing feedback to the team members upon conclusion of the leadership appointment; and           e. meeting with the activity manager to discuss the outcomes of the leadership appointment.			

5. **Time:**

- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 5 min  |
| b. | Interactive Lecture:       | 25 min |
| c. | Total:                     | 30 min |

6. **Substantiation:** An interactive lecture was chosen for this lesson to orient the cadets to the leadership appointment.

7. **References:**

- a. C0-114 ISBN 0-02-863656-2 Pell, A. R. (1999). *The complete idiot's guide to team building*. Indianapolis, IN: Alpha Books.
- b. C0-243 Clark, D. (2007). *After action reviews*. Retrieved February 21, 2008, from <http://www.nwlink.com/~donclark/leader/leadaar.html>
- c. C0-243 Clark, D. (2007). *Leadership & direction*. Retrieved February 21, 2008, from <http://www.nwlink.com/~donclark/leader/leaddir.html>
- d. C0-245 ISBN 1-58062-513-4 Adams, B. (2001). *The everything leadership book*. Avon, MA: Adams Media.
- e. C0-247 ISBN 0-14-024272-4 Rosen, R. H., & Brown, P. B. (1997). *Leading people*. New York, NY: Penguin Books.
- f. C0-248 ISBN 0-7894-4862-9 Heller, R. (1999). *Learning to lead*. New York, NY: DK Publishing, Inc.
- g. C0-253 ISBN 0-7894-8006-9 Bruce, A., & Langdon, K. (2001). *Do it now!* New York, NY: DK Publishing, Inc.
- h. C0-254 ISBN 0-7894-3244-7 Heller, R. (1998). *Communicate clearly*. New York, NY: DK Publishing, Inc.

- i. C0-255 ISBN 0-7645-5408-5 Brounstein, M. (2002). *Managing teams for dummies*. Indianapolis, IN: Wiley Publishing, Inc.
  - j. C0-256 ISBN 0-7894-4863-7 Heller, R. (1999). *Achieving excellence*. New York, NY: DK Publishing, Inc.
- 8. **Training Aids:** Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area.
  - 9. **Learning Aids:** Leadership Appointment Aide-Mémoire.
  - 10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, 403 PC.
  - 11. **Remarks:** Acquire the list of leadership appointments developed by the Training Officer before instructing this lesson.

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**EO C403.01**

1. **Performance:** Participate in a Leadership Seminar
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 participate in a leadership seminar.
4. **Teaching Points:** Have the cadets participate in a leadership seminar on one or more of the following topics:
  - a. problem solving,
  - b. time management,
  - c. communication, and
  - d. supervision.
5. **Time:**

a. Introduction / Conclusion:	10 min
b. Seminar:	80 min
c. Total:	90 min
6. **Substantiation:** A seminar method was chosen for this lesson to stimulate active participation in a tutorial setting and to allow cadets to practice reflective thinking skills. Seminars assist cadets in developing new and imaginative interpretations of leadership topics being explored. Seminars are an interactive way to exchange information on techniques and approaches to the leadership subjects being researched and discussed.
7. **References:**
  - a. C0-022 ISBN 0-02864-207-4 Cole, Kris (2002). *The complete idiot's guide to clear communication*. Indianapolis, IN: Alpha Books.
  - b. C0-115 ISBN 0-7879-4059-3 van Linden, J. A., & Fertman, C. I. (1998). *Youth leadership*. San Francisco, CA: Jossey-Bass Inc., Publishers.
  - c. C0-425 Shurdington Scouts Resource. (1999). *NASA exercise: Survival on the moon*. Retrieved April 14, 2009, from <http://www.shurdington.org/Downloads/NASA%20Exercise.pdf>
  - d. C0-477 Mindtools: Essential skills for an excellent career. (2009). *Stepladder technique: Making better group decisions*. Retrieved April 14, 2009, from [http://www.mindtools.com/pages/article/newTED\\_89.htm](http://www.mindtools.com/pages/article/newTED_89.htm)
  - e. C0-477 Mindtools: Essential skills for an excellent career. (2009). *Six thinking hats*. Retrieved April 14, 2009, from [http://www.mindtools.com/pages/article/newTED\\_07.htm](http://www.mindtools.com/pages/article/newTED_07.htm)

- f. C0-477 Mindtools: Essential skills for an excellent career. (2009). *Why do we procrastinate*. Retrieved March 30, 2009, from [http://www.mindtools.com/pages/article/newHTE\\_96.htm](http://www.mindtools.com/pages/article/newHTE_96.htm)
  - g. C0-477 Mindtools: Essential skills for an excellent career. (2009). *Preparing a to-do list*. Retrieved March 30, 2009, from [http://www.mindtools.com/pages/article/newHTE\\_05.htm](http://www.mindtools.com/pages/article/newHTE_05.htm)
  - h. C0-477 Mindtools: Essential skills for an excellent career. (2009). *Simple prioritization*. Retrieved March 30, 2009, from [http://www.mindtools.com/pages/article/newHTE\\_92.htm](http://www.mindtools.com/pages/article/newHTE_92.htm)
  - i. C0- 479 PedagoNet: Brainteasers. (2009). *Problem solving: Do you have the answer?* Retrieved April 15, 2009, from <http://www.pedagonet.com/brain/brainers.html>
  - j. C0-480 Discovery Education. (2009). *Brain boosters*. Retrieved April 15, 2009, from <http://school.discoveryeducation.com/brainboosters/>
  - k. C0-481 Total success: A different type of training. (2009). *Time management: Manage yourself, not your time*. Retrieved March 31, 2009, from, <http://www.tsuccess.dircon.co.uk/timemanagementtips.htm>
  - l. C0-482 About.com: Small Business: Canada. (2009). *11 Time management tips*. Retrieved March 30, 2009, from, <http://sbinfocanada.about.com/cs/timemanagement/a/timemgttps.htm>
  - m. C0-483 College Board: Inspiring Minds (2009). *Time management tips for high school students*. Retrieved March 31, 2009, from, <http://www.collegeboard.com/student/plan,college-success/116.html>
  - n. C0-487 Department for Community Development, Government of Western Australia. (2008). *Supervision of children*. Retrieved April 1, 2009, from <http://www.pscwa.org.au/documents/DCDGUIOSHCFactSheetSupervisionofChildren.pdf>
8. **Training Aids:** Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area.
9. **Learning Aids:**
- a. Scenarios, and
  - b. Handouts for the seminar selected.
10. **Test Details:** Nil.
11. **Remarks:** This EO may be conducted as many as four times during Proficiency Level Four training.



**PERSONAL FITNESS AND HEALTHY LIVING**

**1. PO X04 – Track Participation in Physical Activities**

This PO and its associated EOs are located in A-CR-CCP-801/PG-001, *Royal Canadian Air Cadets Proficiency Level One Qualification Standard and Plan*.

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## **PHYSICAL ACTIVITIES**

### **1. PO X05– Participate in Physical Activities**

This PO and its associated EOs are located in A-CR-CCP-801/PG-001, *Royal Canadian Air Cadets Proficiency Level One Qualification Standard and Plan*.

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**PO 406**

1. **Performance:** Fire the Cadet Air Rifle During Recreational Marksmanship
2. **Conditions:**
  - a. Given:
    - (1) Cadet air rifle,
    - (2) Cadet air rifle sling,
    - (3) Air rifle pellets,
    - (4) Target frame,
    - (5) Suitable target,
    - (6) Shooting mat,
    - (7) Safety glasses / goggles,
    - (8) Supervision, and
    - (9) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Air rifle range constructed IAW Chapter 1, Section 8 of A-CR-CCP-177/PT-001, *Canadian Cadet Movement: Cadet Marksmanship Program Reference Manual*.
3. **Standard:** IAW A-CR-CCP-177/PT-001, *Canadian Cadet Movement: Cadet Marksmanship Program Reference Manual*, the cadet will fire the cadet air rifle during recreational marksmanship by:
  - a. carrying out safety precautions;
  - b. applying basic marksmanship techniques; and
  - c. following the rules and commands given on a range.
4. **Remarks:** All range practices must be conducted by a Range Safety Officer (Air Rifle) (RSO AR).
5. **Complementary Material:**
  - a. Complementary material associated with PO 406 is designed to provide opportunities for cadets to act as a range assistant, specifically:
    - (1) EO C406.01 (Assist the Range Safety Officer [RSO]), and
    - (2) EO C406.02 (Score Air Rifle Marksmanship Targets).
  - b. Some complementary training offered in previous proficiency levels may be selected as complementary training in Proficiency Level Four, specifically:
    - (1) EO C306.01 (Identify Civilian Marksmanship Organizations),
    - (2) EO C306.02 (Correct Marksmanship Error),
    - (3) EO C306.03 (Adopt the Standing Position With the Cadet Air Rifle), and
    - (4) EO C106.01 (Participate in a Recreational Marksmanship Activity).

- c. When selecting complementary material from previous proficiency levels, training staff shall review the applicable performance objective, lesson specification, and instructional guide.
- d. Squadrons choosing EO C306.03 (Adopt the Standing Position with the Cadet Air Rifle) in either the Proficiency Level Three or Four Programs may follow this training with EO C106.01 (Participate in a Recreational Air Rifle Marksmanship Activity) from the standing position.
- e. Squadrons choosing to instruct EO C406.01 (Perform the Duties of a Range Assistant) should allow cadets to fill roles on the range during air rifle marksmanship practices.

**EO M406.01**

1. **Performance:** Participate in a Recreational Marksmanship Activity
2. **Conditions:**
  - a. Given:
    - (1) Cadet air rifle,
    - (2) Cadet air rifle sling,
    - (3) Air rifle pellets,
    - (4) Target frame,
    - (5) Target,
    - (6) Shooting mat,
    - (7) Safety glasses / goggles,
    - (8) Supervision, and
    - (9) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Air rifle range constructed IAW Part 1, Section 8 of A-CR-CCP-177/PT-001.
3. **Standard:** The cadet shall participate in a recreational marksmanship activity.
4. **Teaching Points:**
  - a. Conduct a range briefing, to include:
    - (1) explaining pertinent sections of range standing orders;
    - (2) reviewing general rules observed on all ranges;
    - (3) reviewing commands used on an air rifle range;
    - (4) describing the layout of the range; and
    - (5) reviewing hand-washing procedures on completion of firing.
  - b. Supervise the cadet's participation in a recreational marksmanship activity, choosing from the following categories:
    - (1) classification,
    - (2) fun activities,
    - (3) timed activities, and
    - (4) competitive team / individual activities.

5. **Time:**

- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 10 min |
| b. | Practical Activity:        | 80 min |
| c. | Total:                     | 90 min |

6. **Substantiation:** A practical activity was chosen for this lesson as it is an interactive way to allow the cadets to experience recreational marksmanship in a safe and controlled environment. This activity contributes to the development of marksmanship skills and knowledge in a fun and challenging setting.

7. **References:**

- a. A0-027 A-CR-CCP-177/PT-001 Director Cadets 3. (2005). *Canadian cadet movement: Cadet marksmanship program reference manual*. Ottawa, ON: Department of National Defence.
- b. A0-041 CATO 14-41 Director Cadets 4. (2007). *Marksmanship, rifles and ammunition*. Ottawa ON: Department of National Defence.

8. **Training Aids:**

- a. Cadet air rifle,
- b. Cadet air rifle sling,
- c. Air rifle pellets,
- d. Target frame,
- e. Target,
- f. Shooting mat,
- g. Safety glasses / goggles,
- h. Stopwatch, and
- i. Pen / pencil.

9. **Learning Aids:**

- a. Cadet air rifle,
- b. Cadet air rifle sling,
- c. Air rifle pellets,
- d. Target frame,
- e. Target,
- f. Shooting mat, and
- g. Safety glasses / goggles.

10. **Test Details:** Nil.



11. **Remarks:**

- a. Hand-washing stations must be available for cleanup after the activity is completed.
- b. Cadets may fire in the standing position if they have previously received the training during C306.03 (Adopt the Standing Position With the Cadet Air Rifle).
- c. Squadrons choosing to instruct EO C406.01 (Assist the Range Safety Officer) should allow cadets to fill these roles during air rifle marksmanship activities.
- d. This activity provides opportunities for cadets to complete a leadership assignment as outlined in PO 403 (Act as a Team Leader).

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**EO C406.01**

1. **Performance:** Assist the Range Safety Officer (RSO)
2. **Conditions:**
  - a. Given:
    - (1) Supervision, and
    - (2) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Air rifle range constructed IAW Chapter 1, Section 8 of A-CR-CCP-177/PT-001, *Canadian Cadet Movement: Cadet Marksmanship Program Reference Manual*.
3. **Standard:** The cadet shall assist the RSO, to include:
  - a. setting up and dismantling an air rifle range;
  - b. acting as the pellet controller;
  - c. acting as a range sentry;
  - d. acting as a firing point assistant; and
  - e. scoring targets.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	<p>Discuss ways to assist the RSO, to include:</p> <ol style="list-style-type: none"> <li>a. setting up an air rifle range, to include:               <ol style="list-style-type: none"> <li>(1) posting warning signals;</li> <li>(2) setting up equipment at the backstop;</li> <li>(3) indicating firing lanes;</li> <li>(4) placing equipment at the firing point;</li> <li>(5) placing equipment behind the firing point; and</li> <li>(6) placing the cadet air rifle at the firing point; and</li> </ol> </li> <li>b. dismantling an air rifle range, to include:               <ol style="list-style-type: none"> <li>(1) storing the cadet air rifle;</li> <li>(2) storing the equipment behind the firing point;</li> <li>(3) storing the equipment at the firing point;</li> <li>(4) cleaning the backstop area;</li> </ol> </li> </ol>	Group Discussion	25 min	<p>A0-027 (pp. 1-9-1 to 1-8-3, pp. 4-4-14 to 4-4-16)</p> <p>A0-041 (pp. E1-1/8 to E1-8/8)</p>

TP	Description	Method	Time	Refs
	<ul style="list-style-type: none"> <li>(5) cleaning the firing lanes; and</li> <li>(6) removing the warning signals;</li> <li>c. controlling pellets, to include:               <ul style="list-style-type: none"> <li>(1) maintaining possession of the pellets at all times;</li> <li>(2) distributing pellets;</li> <li>(3) disposing of pellets;</li> <li>(4) recording the number of pellets used during the activity; and</li> <li>(5) recording the number of pellets used for each rifle;</li> </ul> </li> <li>d. performing the role of a range sentry, to include:               <ul style="list-style-type: none"> <li>(1) restricting access to the range during firing;</li> <li>(2) controlling range warning signals; and</li> <li>(3) notifying the RSO of safety concerns inside / outside the range area;</li> </ul> </li> <li>e. assisting on the firing point, to include:               <ul style="list-style-type: none"> <li>(1) supervising firers responding to range commands;</li> <li>(2) assisting firers as necessary;</li> <li>(3) correcting errors; and</li> <li>(4) notifying the RSO of safety concerns; and</li> </ul> </li> <li>f. scoring targets.</li> </ul>			

5. **Time:**

- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 5 min  |
| b. | Group Discussion:          | 25 min |
| c. | Total:                     | 30 min |

6. **Substantiation:** A group discussion was chosen for this lesson as it allows the cadets to interact with their peers and share their knowledge, experiences, opinions, and feelings about assisting the RSO. Sharing in the discussion encourages the cadet to examine their own thoughts and feelings and may prompt them to re-examine their previously held ideas. Participating in a group discussion improves the cadets' listening skills and team development.

7. **References:**

- a. A0-027 A-CR-CCP-177/PT-001 Director Cadets 3. (2005). *Cadet marksmanship program: Reference manual*. Ottawa, ON: Department of National Defence.
- b. A0-041 CATO 14-41 Director Cadets 4. (2009). *Authorized rifle training*. Ottawa, ON: Department of National Defence.

8. **Training Aids:** Nil.

9. **Learning Aids:** Assist the RSO handout.

10. **Test Details:** Nil.

11. **Remarks:** Cadets will assist the RSO during marksmanship activities, specifically EO M406.01 (Participate in a Recreational Marksmanship Activity) and EO C106.01 (Participate in a Recreational Marksmanship Activity).

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**EO C406.02**

1. **Performance:** Score Air Rifle Marksmanship Targets
2. **Conditions:**
  - a. Given:
    - (1) Exercise targets,
    - (2) Air rifle grouping template,
    - (3) .177 scoring magnifier,
    - (4) Supervision, and
    - (5) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Classroom or training area large enough to accommodate the entire group.
3. **Standard:** The cadet shall score air rifle marksmanship targets, to include:
  - a. grouping targets, and
  - b. competition targets.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Describe air rifle marksmanship targets, to include: <ol style="list-style-type: none"> <li>a. CCM air rifle grouping targets,</li> <li>b. CCM competition targets, and</li> <li>c. non-standard targets.</li> </ol>	Interactive Lecture	5 min	A0-027 (p. 1-9-1)
TP2	Explain, demonstrate and have the cadets score the CCM Air Rifle Grouping Target by: <ol style="list-style-type: none"> <li>a. determining there are five shots in the grouping;</li> <li>b. aligning the air rifle grouping template over the five-shot grouping so that all shots are within a scoring ring;</li> <li>c. determining if the grouping will fit within the next smallest ring without touching the scoring ring;</li> <li>d. repeating as required until the grouping will not fit within the next smallest scoring ring without touching the scoring ring;</li> <li>e. recording the grouping size on the target; and</li> <li>f. determining the classification category.</li> </ol>	Demonstration and Performance	10 min	A0-027 (pp. 1-9-1 to 1-9-2)

TP	Description	Method	Time	Refs
TP3	<p>Explain, demonstrate and have the cadets score the CCM Competition Target by:</p> <ul style="list-style-type: none"> <li>a. determining the score on each diagram by: <ul style="list-style-type: none"> <li>(1) determining the value by inspecting with the naked eye; and</li> <li>(2) determining the value using the .177-scoring magnifier by: <ul style="list-style-type: none"> <li>(a) aligning a scoring magnifier over the pellet hole;</li> <li>(b) awarding the higher value where a shot touches a scoring ring or breaks a scoring ring; and</li> <li>(c) awarding the lower value where a gap exists between the shot and a scoring ring;</li> </ul> </li> </ul> </li> <li>b. calculating any penalties; and</li> <li>c. recording the score on the target.</li> </ul> <p>Note: If scoring plugs and templates are required to determine a value, they shall be used under the supervision of an Air Rifle Marksmanship Instructor / Air Rifle Range Safety Officer.</p>	Demonstration and Performance	10 min	A0-027 (pp. 1-9-2 to 1-9-4)

5. **Time:**

- |    |                                |        |
|----|--------------------------------|--------|
| a. | Introduction / Conclusion:     | 5 min  |
| b. | Interactive Lecture:           | 5 min  |
| c. | Demonstration and Performance: | 20 min |
| d. | Total:                         | 30 min |

6. **Substantiation:**

- a. An interactive lecture was chosen for TP 1 to orient the cadets to the targets used during air rifle marksmanship activities and to generate interest.
- b. A demonstration and performance was chosen for TPs 2 and 3 as it allows the instructor to explain and demonstrate scoring grouping and competition targets while providing an opportunity for the cadets to practice under supervision.

7. **References:** A0-027 A-CR-CCP-177/PT-001 Director Cadets 3. (2005). *Cadet marksmanship program: Reference manual*. Ottawa, ON: Department of National Defence.

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP) appropriate for classroom / training area,
- b. Exercise targets,



- c. Air rifle grouping template, and
- d. .177 scoring magnifier.

9. **Learning Aids:**

- a. Exercise targets,
- b. Air rifle grouping template,
- c. .177 scoring magnifier, and
- d. Pencil.

10. **Test Details:** Nil.

11. **Remarks:** Nil.

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**PO 407**

1. **Performance:** Serve in an Air Cadet Squadron
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 will serve in an air cadet squadron, to include:
  - a. participating in year four training; and
  - b. exploring year four CSTC training opportunities.
4. **Remarks:**
  - a. EO M407.01 (Discuss Proficiency Level Four Training Opportunities) shall be conducted at the beginning of the training year.
  - b. EO M407.02 (Discuss Year Four Cadet Summer Training Centre [CSTC] Training Opportunities) shall be conducted prior to the CSTC application deadline.
5. **Complementary Material:**
  - a. Complementary material associated with PO 407 is designed to enhance the cadet's knowledge of serving in an air cadet squadron through a number of activities such as EO C407.01 (Prepare for a Merit Review Board).
  - b. Some complementary training offered in previous levels may be selected as complementary training in year four, specifically:
    - (1) EO C307.01 (Participate in a Presentation Given by a Guest Speaker From the Regional Cadet Support Unit [RCSU]),
    - (2) EO C307.02 (Participate in a Presentation Given by the Cadet Liaison Officer [CLO]),
    - (3) EO C307.03 (Participate in a Presentation Given by a Guest Speaker from the Air Cadet League of Canada [ACLC]),
    - (4) EO C307.04 (Identify the Application Procedure for the Glider and Power Pilot Scholarships), and
    - (5) EO C307.05 (Participate in a Presentation on the Duke of Edinburgh Award Program).

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**EO M407.01**

1. **Performance:** Discuss Proficiency Level Four Training Opportunities
2. **Conditions:**
  - a. Given:
    - (1) Handout of performance objectives (POs) and enabling objectives (EOs) of Proficiency Level Four training opportunities,
    - (2) Supervision, and
    - (3) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Classroom or training area large enough to accommodate the entire group.
3. **Standard:** The cadet shall:
  - a. discuss Proficiency Level Four mandatory training, to include:
    - (1) common training, and
    - (2) air elemental training;
  - b. discuss Proficiency Level Four complementary training; and
  - c. discuss leadership appointment opportunities.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	<p>Conduct an in-class activity to identify Proficiency Level Four mandatory training opportunities, to include:</p> <ol style="list-style-type: none"> <li>a. training common to the sea, army, and air elements of the CCO, to include:               <ol style="list-style-type: none"> <li>(1) community service,</li> <li>(2) leadership,</li> <li>(3) personal fitness and healthy living,</li> <li>(4) recreational sports,</li> <li>(5) air rifle marksmanship,</li> <li>(6) general cadet knowledge,</li> <li>(7) drill, and</li> <li>(8) instructional techniques; and</li> </ol> </li> <li>b. air elemental training, to include:               <ol style="list-style-type: none"> <li>(1) CF familiarization,</li> <li>(2) aviation subjects,</li> </ol> </li> </ol>	In-Class Activity	10 min	A0-096 A3-064

TP	Description	Method	Time	Refs
	(3) aerospace, and (4) aircrew survival.			
TP2	Identify Proficiency Level Four complementary training opportunities.	Interactive Lecture	10 min	See Remarks para. 11 (a).
TP3	Discuss leadership appointment opportunities at the squadron.	Group Discussion	5 min	

5. **Time:**

- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 5 min  |
| b. | In-Class Activity:         | 10 min |
| c. | Interactive Lecture:       | 10 min |
| d. | Group Discussion:          | 5 min  |
| e. | Total:                     | 30 min |

6. **Substantiation:**

- An in-class activity was chosen for TP 1 as it is an interactive way to provoke thought and stimulate interest among the cadets.
- An interactive lecture was chosen for TP 2 to orient the cadets to and generate interest in Proficiency Level Four complementary training opportunities.
- A group discussion was chosen for TP 3 as it allows the cadets to interact with their peers and share their knowledge, experiences, opinions, and feelings about leadership appointments at the squadron.

7. **References:**

- A0-096 CATO 11-04 Director Cadets 3. (2007). *Cadet program outline*. Ottawa, ON: Department of National Defence.
- A3-064 CATO 51-01 Director Cadets 3. (2008). *Air cadet program outline*. Ottawa, ON: Department of National Defence.

8. **Training Aids:**

- Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area,
- Handouts of the POs and EOs for Proficiency Level Four training, and
- Tape.

9. **Learning Aids:** Handouts of the POs and EOs for Proficiency Level Four training.

10. **Test Details:** Nil.

11. **Remarks:**

- a. For Proficiency Level Four complementary training opportunities in TP 2, refer to the squadron's annual training plan.
- b. This EO should be scheduled as early as possible in the training year. See the sample schedule located at Chapter 2, Annex C.

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**EO M407.02**

1. **Performance:** Discuss Year Four Cadet Summer Training Centre (CSTC) Training Opportunities
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 year four CSTC training opportunities, to include:
  - a. areas of interest,
  - b. courses within each area of interest,
  - c. prerequisites for the courses within each area of interest,
  - d. staff cadet advanced training, and
  - e. the choices for year four CSTC training opportunities.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Discuss the areas of interest of CSTC training opportunities, to include: <ol style="list-style-type: none"> <li>a. fitness and sports,</li> <li>b. music,</li> <li>c. marksmanship,</li> <li>d. leadership,</li> <li>e. aviation,</li> <li>f. aviation technology,</li> <li>g. aerospace,</li> <li>h. aircrew survival, and</li> <li>i. staff cadet advanced training.</li> </ol>	Group Discussion	10 min	A0-010 A0-033 A0-128 A3-029 A3-061 A3-192
TP2	Explain the choices for year four CSTC training opportunities, to include: <ol style="list-style-type: none"> <li>a. all six-week courses offered within each area of common interest,</li> <li>b. all six-week courses offered within each elemental-specific area,</li> </ol>	Interactive Lecture	15 min	A0-010 A0-033 A3-029

TP	Description	Method	Time	Refs
	c. the three-week Advanced Aviation Course, and d. prerequisites for each six-week course.			

5. **Time:**

- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 5 min  |
| b. | Group Discussion:          | 10 min |
| c. | Interactive Lecture:       | 15 min |
| d. | Total:                     | 30 min |

6. **Substantiation:**

- A group discussion was chosen for TP 1 as it allows the cadets to interact with their peers and share their experiences, opinions, and feelings about year four CSTC training opportunities.
- An interactive lecture was chosen for TP 2 to orient the cadets to the choices for year four CSTC training opportunities and to generate interest in the subject.

7. **References:**

- A0-010 CATO 11-04 Director Cadets 2. (2007). *Cadet program outline*. Ottawa, ON: Department of National Defence.
- A0-128 CATO 13-28 Director Cadets 2. (2006). *Advanced training—Staff cadets*. Ottawa, ON: Department of National Defence.
- A3-029 CATO 51-01 Director Cadets 3. (2006). *Air cadet program outline*. Ottawa, ON: Department of National Defence.
- A3-061 CATO 54-27 Director Cadets 4. (2007). *Power pilot scholarship program*. Ottawa, ON: Department of National Defence.
- A3-192 CATO 54-26 Director Cadets 4. (2007). *Glider Pilot Scholarship Program*. Ottawa, ON: Department of National Defence.

8. **Training Aids:** Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area.9. **Learning Aids:** Nil.10. **Test Details:** Nil.11. **Remarks:**

- This EO should be conducted before the summer training application deadline.
- It is recommended that the summer training application forms be completed during a training session after this EO has been conducted.

**EO C407.01**

1. **Performance:** Prepare for a Merit Review Board
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 prepare for a merit review board by:
  - a. identifying occasions requiring merit review boards;
  - b. describing the preparation process for a merit review board for promotion; and
  - c. participating in a practice merit review board based on a scenario.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Identify occasions requiring a merit review board, to include selection of recipients for: <ol style="list-style-type: none"> <li>a. promotions,</li> <li>b. awards,</li> <li>c. Cadet Summer Training Centre (CSTC) training opportunities,</li> <li>d. CSTC staff appointments, and</li> <li>e. scholarships.</li> </ol>	Interactive Lecture	5 min	A3-006 A0-133 C0-416
TP2	Describe: <ol style="list-style-type: none"> <li>a. how to prepare for a merit review board for promotion; and</li> <li>b. tips for a successful interview.</li> </ol> Note: Cadets will prepare for an example practice merit review board for promotion at the end of this TP.	Interactive Lecture	20 min	A3-006 A0-133
TP3	Have the cadets participate in a practice merit review board based on the instructions given in TP 2.	In-Class Activity	55 min	A0-133

5. **Time:**

- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 10 min |
| b. | Interactive Lecture:       | 25 min |
| c. | In-Class Activity:         | 55 min |
| d. | Total:                     | 90 min |

6. **Substantiation:**

- a. An interactive lecture was chosen for TPs 1 and 2 to present preparations for merit review boards and to summarize the teaching points.
- b. An in-class activity was chosen for TP 3 as it is an interactive way to provoke thought and stimulate interest among the cadets.

7. **References:**

- a. A0-133 CATO 13-02 Director Cadets 3. (2008). *Cadet rank promotions*. Ottawa, ON: Department of National Defence.
- b. A3-006 CATO 55-04 Director Cadets 3. (2005). *Air cadet dress instructions*. Ottawa, ON: Department of National Defence.
- c. C0-416 Air Cadet League of Canada BC Committee (2009). *Sponsoring committee resources: Mock boards*. Retrieved March 4, 2009, from [http://www.aircadetleague.bc.ca/SponCommResources/Mock\\_Boards.PDF](http://www.aircadetleague.bc.ca/SponCommResources/Mock_Boards.PDF)

8. **Training Aids:** Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area.

9. **Learning Aids:** Nil.

10. **Test Details:** Nil.

11. **Remarks:**

- a. Cadets will be given scenarios to prepare for a merit review board at the end of TP 2.
- b. Some nationally directed and regionally directed activities may periodically require merit review boards.
- c. When scheduling this lesson, allow at least two weeks between TPs 2 and 3.
- d. For cadets interested after TP1 (e), M307.03 (Recognize the Partnership Between the Air Cadet League of Canada [ACLC] and DND) includes information on cadet scholarships provided for by the ACLC.

**PO 408**

1. **Performance:** Command a Flight on Parade
2. **Conditions:**
  - a. Given:
    - (1) Parade sequence aide-mémoire, and
    - (2) Supervision.
  - b. Denied: Assistance.
  - c. Environmental: Drill hall or outdoor parade square in favourable weather.
3. **Standard:** IAW A-PD-201-000/PT-000, *The Canadian Forces Manual of Drill and Ceremonial*, the cadet will command a flight on parade, to include:
  - a. executing correct and sharp drill movements;
  - b. following a parade sequence;
  - c. delivering words of command by:
    - (1) applying vocal techniques; and
    - (2) using the following parts of the command:
      - (a) cautionary, and
      - (b) executive; and
    - (3) calling on the correct foot;
  - d. demonstrating confidence; and
  - e. correcting errors as required.
4. **Remarks:** Nil.
5. **Complementary Material:**
  - a. Complementary material associated with PO 408 is designed to provide a historical background about drill as well as allow additional opportunities for cadet squadrons with an interest in drill to develop the cadets' skills in this area, specifically:
    - (1) EO C408.01 (Discuss the History of Drill), and
    - (2) EO C408.02 (View a Re-Enactment that Demonstrates the History of Drill).
  - b. Some complementary training offered in previous proficiency levels may be selected as complementary training in the Proficiency Level Four Program, specifically:
    - (1) EO C308.01 (Execute Flag Party Drill),
    - (2) EO C308.02 (Deliver Words of Command),

- (3) EO C208.01 (Practice Ceremonial Drill as a Review), and
  - (4) EO C208.02 (Execute Drill With Arms).
- c. When selecting complementary material from previous proficiency levels, training staff will review the applicable performance objective, lesson specification and instructional guide.

**EO M408.01**

1. **Performance:** Discuss Commanding a Flight on Parade
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, as a member of a group, shall discuss commanding a flight on parade, to include:
  - a. communicating effectively;
  - b. executing sharp personal drill;
  - c. maintaining dress IAW dress instructions;
  - d. exhibiting a positive attitude; and
  - e. conducting oneself in an appropriate manner.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Discuss commanding a flight on parade, to include: <ol style="list-style-type: none"> <li>a. communicating effectively;</li> <li>b. executing sharp personal drill;</li> <li>c. maintaining dress IAW dress instructions;</li> <li>d. exhibiting a positive attitude; and</li> <li>e. conducting oneself in an appropriate manner.</li> </ol>	Group Discussion	25 min	A0-002 (p. 1-1-1, pp. 1-1-3 to 1-1-8) A3-006

5. **Time:**
  - a. Introduction / Conclusion: 5 min
  - b. Group Discussion: 25 min
  - c. Total: 30 min
6. **Substantiation:** A group discussion was chosen for this lesson as it allows the cadets to interact with their peers and share their knowledge and opinions about commanding a flight on parade. Sharing in the discussion encourages the cadets to examine their own thoughts and feelings and may prompt them to re-examine their previously held ideas. Participating in a group discussion improves the cadets' listening skills and team development.

7. **References:**

- a. A0-002 A-PD-201-000/PT-000 Director History and Heritage 3-2. (2005). *The Canadian Forces manual of drill and ceremonial*. Ottawa, ON: Department of National Defence.
- b. A3-006 CATO 55-04 Director Cadets 3. (2005). *Air cadet dress instructions*. Ottawa, ON: Department of National Defence.

8. **Training Aids:** Presentation aids (eg, whiteboard / flip chart / OHP) appropriate for the classroom / training area.

9. **Learning Aids:** Nil.

10. **Test Details:** Nil.

11. **Remarks:** Nil.



**EO M408.02**

1. **Performance:** Identify Parade Sequence
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 identify the sequence of the following parades:
  - a. parade night, and
  - b. annual ceremonial review (ACR).
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Discuss the roles of the following parades within the Cadet Program: <ol style="list-style-type: none"> <li>a. parade night,</li> <li>b. ACR,</li> <li>c. Remembrance Day, and</li> <li>d. special ceremonial parades.</li> </ol>	Interactive Lecture	5 min	A0-002 (p. 1-2-7, p. 2-6, pp. 11-1-2 to 11-1-3, p. 11-2-10, pp. 12-1-1 to 12-1-2)
TP2	Describe the parade night sequence, to include: <ol style="list-style-type: none"> <li>a. opening parade, to include:               <ol style="list-style-type: none"> <li>(1) forming up;</li> <li>(2) calling the roll;</li> <li>(3) inspecting;</li> <li>(4) marching past;</li> <li>(5) making announcements; and</li> <li>(6) dismissing; and</li> </ol> </li> <li>b. closing parade, to include:               <ol style="list-style-type: none"> <li>(1) forming up;</li> <li>(2) making announcements;</li> <li>(3) advancing in review order; and</li> <li>(4) dismissing.</li> </ol> </li> </ol>	Interactive Lecture	10 min	A0-002 (pp. 2-1 to 2-26, pp. 2-10 to 2-29, pp. 3-1 to 3-9, pp. 3-15 to 3-19, pp. 3-24 to 3-26, pp. 3-29 to 3-32, pp. 7-1-1 to 8-7-4)
TP3	Describe the ACR sequence, to include: <ol style="list-style-type: none"> <li>a. form up;</li> <li>b. reception of the reviewing officer (RO);</li> </ol>	Interactive Lecture	10 min	A0-002 (pp. 7-1-1 to 8-7-4, p. 9-2-1)

TP	Description	Method	Time	Refs
	c. inspection by the RO; d. march past; e. awards and presentations; f. address by the RO; g. advance in review order; h. departure of the RO; and i. dismissal.			

5. **Time:**

- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 5 min  |
| b. | Interactive Lecture:       | 25 min |
| c. | Total:                     | 30 min |

6. **Substantiation:** An interactive lecture was chosen for this lesson to orient the cadets to the parade sequences of a parade night and an ACR.

7. **References:** A0-002 A-PD-201-000/PT-000 Director History and Heritage 3-2. (2005). *The Canadian Forces manual of drill and ceremonial*. Ottawa, ON: Department of National Defence.

8. **Training Aids:** Presentation aids (eg, whiteboard / flip chart / OHP) appropriate for the classroom / training area.

9. **Learning Aids:** Nil.

10. **Test Details:** Nil.

11. **Remarks:** Nil.

**EO M408.03**

1. **Performance:** Command a Squad
2. **Conditions:**
  - a. Given:
    - (1) Parade sequence aide-mémoire card,
    - (2) Supervision, and
    - (3) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Drill hall or outdoor parade square in favourable weather.
3. **Standard:** The cadet shall command a squad, to include:
  - a. assuming proper command position;
  - b. delivering words of command by:
    - (1) applying vocal techniques;
    - (2) using the following parts of the command:
      - (a) cautionary, and
      - (b) executive;
    - (3) calling on the correct foot; and
  - c. paying compliments, as required.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Explain, demonstrate and have the cadets command a squad, to include: <ol style="list-style-type: none"> <li>a. falling in;</li> <li>b. greeting the Reviewing Officer (RO) to complete the inspection;</li> <li>c. leading the squad on the march past; and</li> <li>d. falling out.</li> </ol>	Demonstration and Performance	25 min	A0-002 (pp. 7-2-1 to 7-2-9, pp. 7-3-2 to 7-3-38, p. 7-4-10, p. 7-4-17, p. 7-4-22, p. 9-2-4, pp. 9-2-9 to 9-2-10)

5. **Time:**
  - a. Introduction / Conclusion: 5 min
  - b. Demonstration and Performance: 25 min
  - c. Total: 30 min

6. **Substantiation:** A demonstration and performance was chosen for this lesson as it allows the instructor to explain and demonstrate the skill of commanding a squad while providing an opportunity for the cadets to practice the skill under supervision.
7. **References:** A0-002 A-PD-201-000/PT-000 Director History and Heritage 3-2. (2005). *The Canadian Forces manual of drill and ceremonial*. Ottawa, ON: Department of National Defence.
8. **Training Aids:** Parade Sequence Aide-Mémoire Card.
9. **Learning Aids:** Parade Sequence Aide-Mémoire Card.
10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, 408 PC.
11. **Remarks:** Where there are a large number of cadets, divide the group into two or three squads and rotate the cadets through as commanders.

**EO M408.04**

1. **Performance:** Inspect a Cadet on Parade
2. **Conditions:**
  - a. Given:
    - (1) Supervision, and
    - (2) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Drill hall or outdoor parade square in favourable weather.
3. **Standard:** The cadet shall inspect a cadet on parade, to include:
  - a. evaluating dress; and
  - b. correcting errors.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Conduct an activity where the cadets will, in groups of three, identify the correct way of wearing the cadet uniform by referring to elemental cadet dress instructions, to include: <ol style="list-style-type: none"> <li>a. headdress;</li> <li>b. clothes on the upper body;</li> <li>c. clothes on the lower body;</li> <li>d. footwear; and</li> <li>e. overall personal appearance.</li> </ol>	In-Class Activity	15 min	A3-006
TP2	Explain, demonstrate and have the cadets perform an individual inspection, to include: <ol style="list-style-type: none"> <li>a. inspecting the front of a cadet from head to toe;</li> <li>b. inspecting the back of a cadet from head to toe; and</li> <li>c. correcting errors verbally.</li> </ol>	Demonstration and Performance	35 min	A0-002 (p. 1-1-12, p. 7-3-17)

5. **Time:**
  - a. Introduction / Conclusion: 10 min
  - b. In-Class Activity: 15 min
  - c. Demonstration and Performance: 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 provoke thought and stimulate interest and confirm comprehension of elemental dress instructions.
- b. A demonstration and performance was chosen for TP 2 as it allows the instructor to explain and demonstrate the skill of inspecting a cadet on parade while providing an opportunity for the cadets to practice the skill under supervision.

7. **References:**

- a. A0-002 A-PD-201-000/PT-000 Director History and Heritage 3-2. (2005). *The Canadian Forces manual of drill and ceremonial*. Ottawa, ON: Department of National Defence.
- b. A3-006 CATO 55-04 Director Cadets 3. (2005). *Air cadet dress instructions*. Ottawa, ON: Department of National Defence

8. **Training Aids:**

- a. CATO 55-04, *Air Cadet Dress Instructions*, and
- b. Dress Instructions Activity Answer Sheet.

9. **Learning Aids:**

- a. CATO 55-04, *Air Cadet Dress Instructions*,
- b. Dress Instructions Activity Worksheet, and
- c. Pen / pencil.

10. **Test Details:** Nil.

11. **Remarks:** Nil.

**EO C408.01**

1. **Performance:** Discuss the History of Drill
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 the history of drill, to include:
  - a. origins of drill,
  - b. purposes of drill on the battlefield,
  - c. evolution of drill procedures, and
  - d. variance of drill between the three services before unification.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Discuss the origins of drill, to include: <ol style="list-style-type: none"> <li>a. Romans,</li> <li>b. Greeks and Spartans, and</li> <li>c. Chinese.</li> </ol>	Interactive Lecture	10 min	A0-002 (pp. 1-1-1 to 1-1-2) C2-249 (pp. 102–121)
TP2	Discuss the evolution of drill movements, to include: <ol style="list-style-type: none"> <li>a. Swiss,</li> <li>b. Dutch,</li> <li>c. Germans,</li> <li>d. British, to include:               <ol style="list-style-type: none"> <li>(1) march,</li> <li>(2) quick march,</li> <li>(3) wheeling step, and</li> <li>(4) double march; and</li> </ol> </li> <li>e. Canadian, to include:               <ol style="list-style-type: none"> <li>(1) Royal Canadian Navy,</li> <li>(2) Canadian Army, and</li> <li>(3) Royal Canadian Air Force.</li> </ol> </li> </ol>	Interactive Lecture	15 min	A0-002 (p. 1-1-2) C2-249 (pp. 127–145)

5. **Time:**

- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 5 min  |
| b. | Interactive Lecture:       | 25 min |
| c. | Total:                     | 30 min |

6. **Substantiation:** An interactive lecture was chosen for this lesson to orient the cadets to the history of drill and generate interest in the subject.

7. **References:**

- a. A0-002 A-PD-201-000/PT-000 Director History and Heritage 3-2. (2005). *The Canadian Forces manual of drill and ceremonial*. Ottawa, ON: Department of National Defence.
- b. C2-249 ISBN 978-0674-5023-07 McNeill, W. (1997). *Keeping together in time: Dance and drill in human history*. Cambridge, MA: Harvard University Press.

8. **Training Aids:** Presentation aids (eg, whiteboard / flip chart / OHP) appropriate for the classroom / training area.

9. **Learning Aids:** Nil.

10. **Test Details:** Nil.

11. **Remarks:** Nil.



**EO C408.02**

1. **Performance:** View a Re-Enactment That Demonstrates the History of Drill
2. **Conditions:**
  - a. Given:
    - (1) Re-enactment demonstrating the history of drill (live performance or video),
    - (2) Supervision, and
    - (3) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Classroom or training area large enough to accommodate the entire group.
3. **Standard:** The cadet shall:
  - a. view a re-enactment that demonstrates the history of drill; and
  - b. participate in a group discussion comparing past military drill to current military drill.
4. **Teaching Points:** This EO offers an opportunity for the cadet to view and discuss a re-enactment that demonstrates the history of drill. This lesson shall be structured as follows:
  - a. Brief the cadet, prior to the re-enactment, on the relevance of the history of drill, to include:
    - (1) the purpose of drill on the battlefield; and
    - (2) the evolution of drill throughout the years.
  - b. View a re-enactment that demonstrates the history of drill.
  - c. Conduct a group discussion in which the cadets discuss:
    - (1) what they learned from the re-enactment;
    - (2) what they felt was the most interesting aspect; and
    - (3) what they found was different compared to drill today.
5. **Time:**

a. Introduction / Conclusion:	10 min
b. In-Class Activity / Field Trip:	60 min
c. Group Discussion:	20 min
d. Total:	90 min

6. **Substantiation:**

- a. An in-class activity / field trip was chosen for TP 1 as it is an interactive way to stimulate interest in the history of drill.
- b. A group discussion was chosen for TP 2 as it allows the cadets to interact with their peers and share their knowledge and opinions about the history of drill. Sharing in the discussion encourages the cadets to examine their own thoughts and feelings and may prompt them to re-examine their previously held ideas. Participating in a group discussion improves the cadets' listening skills and team development.

7. **References:** Nil.

8. **Training Aids:**

- a. TV, as required, and
- b. DVD or VCR, as required.

9. **Learning Aids:** Nil.

10. **Test Details:** Nil.

11. **Remarks:**

- a. The historical drill re-enactment chosen can be an in-class activity (video or DVD) or a field trip (live performance).
- b. There is no instructional guide provided for this EO.

**PO 409**

1. **Performance:** Instruct a Lesson
2. **Conditions:**
  - a. Given:
    - (1) A lesson specification,
    - (2) An instructional guide, and
    - (3) Supervision.
  - b. Denied: Assistance.
  - c. Environmental: Classroom or training area large enough to accommodate the entire group.
3. **Standard:** The cadet will instruct a 30-minute lesson by:
  - a. preparing the lesson;
  - b. introducing the lesson;
  - c. presenting the content of the lesson;
  - d. confirming the knowledge / skills learned during the lesson; and
  - e. concluding the lesson.
4. **Remarks:**
  - a. The lessons assigned will be chosen from Proficiency Levels One and Two.
  - b. It is recommended that this PO be conducted early in the training year to allow time for the cadets to instruct their assigned lessons to Proficiency Levels One and Two cadets.
5. **Complementary Material:**
  - a. Complementary material associated with PO 409 is designed to enhance the cadet's ability to instruct a lesson through a number of activities:
    - (1) EO C409.01 (Plan a Lesson),
    - (2) EO C409.02 (Instruct a 30-Minute Lesson),
    - (3) EO C409.03 (Act as an Assistant Instructor),
    - (4) EO C409.04 (Participate in a Creative Lesson Planning Workshop),
    - (5) EO C409.05 (Act as an Assistant Drill Instructor), and
    - (6) EO C409.06 (Instruct a 30-Minute Drill Lesson)

- b. Some complementary material offered in previous proficiency levels may be conducted as complementary training in Proficiency Level Four, specifically:
  - (1) EO C309.04 (Identify Formations for Drill Instruction),
  - (2) EO C309.05 (Plan a Drill Lesson), and
  - (3) EO C309.06 (Instruct a 15-Minute Drill Lesson).
- c. When selecting complementary training from previous proficiency levels, training staff will review the applicable performance objective, lesson specification and instructional guide.

**EO M409.01**

1. **Performance:** Identify Methods of Instruction
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:
  - a. identify the following methods of instruction:
    - (1) group discussion,
    - (2) guided discussion,
    - (3) role-play,
    - (4) experiential learning,
    - (5) problem-based learning, and
    - (6) case study; and
  - b. select an appropriate method of instruction for a given topic.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Conduct an activity where the cadets will review methods of instruction, to include: <ol style="list-style-type: none"> <li>a. interactive lecture,</li> <li>b. demonstration and performance,</li> <li>c. in-class activity,</li> <li>d. practical activity,</li> <li>e. game, and</li> <li>f. field trip.</li> </ol>	In-Class Activity	10 min	A0-055 (pp. 17–22)
TP2	Conduct an activity where the cadets will describe methods of instruction, to include: <ol style="list-style-type: none"> <li>a. group discussion,</li> <li>b. guided discussion,</li> <li>c. role-play,</li> <li>d. experiential learning,</li> </ol>	In-Class Activity	20 min	A0-055 (p. 16, p. 19, p. 21) A0-123 (pp. 5–17) C0-379

TP	Description	Method	Time	Refs
	e. problem-based learning, and f. case study.			
TP3	Conduct a group discussion on the application of methods of instruction, to include: a. interactive lecture, b. demonstration and performance, c. in-class activity, d. practical activity, e. game, f. field trip, g. group discussion, h. guided discussion, i. role-play, j. experiential learning, k. problem-based learning, and l. case study	Group Discussion	20 min	A0-055 (pp. 17–22) A0-123 (p. 3)

5. **Time:**

- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 10 min |
| b. | In-Class Activity:         | 30 min |
| c. | Group Discussion:          | 20 min |
| d. | Total:                     | 60 min |

6. **Substantiation:**

- An in-class activity was chosen for TPs 1 and 2 as it is an interactive way to review previously learned material and confirm the cadets' comprehension of new methods of instruction.
- A group discussion was chosen for TP 3 as it allows the cadets to interact with their peers and share their knowledge, experiences, opinions and feelings about the application of various methods of instruction.

7. **References:**

- A0-055 A-P9-050-000/PT-006 Director Training and Education Policy. (2002). *Canadian Forces individual training and education system* (Vol. 6). Ottawa, ON: Department of National Defence.
- A0-123 A-PD-050-001-PF-001 Chief of Defence Staff. (2001). *Central flying school flight instructors handbook*. Winnipeg, MB: Department of National Defence.
- C0-379 Kizlik, R. (2009). *Education Information for new and future teachers*. Retrieved February 26, 2009 from [www.adprima.com](http://www.adprima.com)

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP) appropriate for the classroom / training area,
- b. Teaching = learning handout,
- c. Methods of instruction worksheet,
- d. Methods of instruction puzzle,
- e. Methods of instruction guide,
- f. Methods of instruction information sheets,
- g. Methods worksheet,
- h. Method madness handout,
- i. Envelopes,
- j. Binder,
- k. Markers,
- l. Pen / pencil,
- m. Tape, and
- n. Stopwatch.

9. **Learning Aids:**

- a. Teaching = learning handout,
- b. Methods of instruction worksheet,
- c. Methods of instruction puzzle,
- d. Methods of instruction information sheets,
- e. Methods worksheet, and
- f. Method madness handout.

10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, 409 PC.

11. **Remarks:** Nil.

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**EO M409.02**

1. **Performance:** Identify Elements of a Positive Learning Environment
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 identify elements of a positive learning environment, to include:
  - a. physical and emotional safety;
  - b. stress management; and
  - c. classroom / training area management.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Describe the importance of a physically and emotionally safe learning environment.	Interactive Lecture	15 min	A0-118 (p. 5, p. 7, p. D 1) C0-376 (p. 39, p. 103) C0-383 C0-385
TP2	Conduct a group discussion on stress management techniques, to include: <ol style="list-style-type: none"> <li>a. creating positive stress to encourage learning; and</li> <li>b. controlling negative stress by:               <ol style="list-style-type: none"> <li>(1) informing cadets of expectations;</li> <li>(2) providing necessary resources;</li> <li>(3) providing adequate time to accomplish tasks;</li> <li>(4) incorporating physical activity;</li> <li>(5) providing time to process information; and</li> <li>(6) practicing relaxation techniques.</li> </ol> </li> </ol>	Group Discussion	15 min	A0-055 (pp. 44–47) A0-118 (p. 12, p. L 1) C0-191 (p. 293, p. 294, p. 300, p.301) C0-375 C0-380 (pp. 8.14–8.16, p. 4.4) C0-191

TP	Description	Method	Time	Refs
TP3	Identify classroom / training area management techniques, to include: a. attention signals; b. correcting behaviour; c. providing positive reinforcement; d. engaging the learner; and e. managing distractions.	Interactive Lecture	20 min	A0-055 (pp. 44–47) C0-375 (p. 5.6, p. 5.7) C0-381 C0-382 C0-384

5. **Time:**

- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 10 min |
| b. | Interactive Lecture:       | 35 min |
| c. | Group Discussion:          | 15 min |
| d. | Total:                     | 60 min |

6. **Substantiation:**

- An interactive lecture was chosen for TPs 1 and 3 to provoke thought and stimulate the cadets' interest in the importance of a physically and emotionally safe learning environment and a well-managed classroom / training area.
- A group discussion was chosen for TP 2 as it allows the cadets to interact with their peers and share their knowledge, experiences, opinions and feelings about stress management.

7. **References:**

- A0-055 A-P9-050-000/PT-006 Director Training and Education Policy. (2002). *Canadian Forces individual training and education system* (Vol. 6). Ottawa, ON: Department of National Defence.
- A0-118 Director Cadets 3. (2007). *Youth reference guide*. Ottawa, ON: Department of National Defence.
- C0-191 ISBN 978-0-7360-6675-4 Corbin, C. & Lindsey, R. (2007). *Fitness for life: Updated fifth edition*. Windsor: Human Kinetics.
- C0-375 ISBN 978-1-879097-10-0 Kagan, S., & Kagan, M. (2009). *Kagan cooperative learning*. San Clemente, CA: Kagan Publishing.
- C0-376 ISBN 0-7619-4626-8 Earle, L. M. (2003). *Assessment as learning*. Thousand Oaks, CA: Corwin Press, Inc.
- C0-380 Scott, E. (2008). *Cortisol and stress: how to stay healthy*. Retrieved February 25, 2009, from <http://www.Stress.about.com/od/stresshealth/a/cortisol.htm?p=1>
- C0-381 McDonald, E. (2006). *How to involve and engage students*. Retrieved March 4, 2009, from [http://www.education-world.com/a\\_curr/columnists/mcdonald/mcdonald007.shtml](http://www.education-world.com/a_curr/columnists/mcdonald/mcdonald007.shtml)
- C0-382 Bear, TC. (2009). *Quiet signals for getting attention and control of your classroom*. Retrieved February 27, 2009, from <http://www.teachercreated.com/blog/?tag=attention-signals>

- i. C0-383 Bell, A. (2007). *Creating a learning centered environment - Introduction*. Retrieved February 23, 2009, from <http://www.dialogueonlearning.tc3.edu/model/environment/Introduction-grp.htm>
- j. C0-384 Handy, K. (2009). *Classroom management plan*. Retrieved February 27, 2009, from <http://www.katiehandy.wordpress.com/classroom-management-plan/>
- k. C0-385 Boudreau, D. (2008). *Creating the ideal learning environment - Emotional*. Retrieved February 25, 2009, from <http://ezinearticles.com/?Creating-the-Ideal-Learning-Environment---Emotional&id=1536435>

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP) appropriate for the classroom / training area,
- b. Relaxation exercise handout,
- c. Create a positive learning environment crossword puzzle, and
- d. Create a positive learning environment crossword puzzle answer key.

9. **Learning Aids:**

- a. Relaxation exercise handout, and
- b. Create a positive learning environment crossword puzzle.

10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, 409 PC.

11. **Remarks:** Nil.

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**EO M409.03**

1. **Performance:** Describe Learner Needs
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 describe:
  - a. the importance of:
    - (1) relevant and meaningful material, and
    - (2) information processing time;
  - b. types of learners using:
    - (1) developmental periods, and
    - (2) learning styles; and
  - c. the needs of learners, specific to:
    - (1) developmental periods, and
    - (2) learning styles.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Describe the importance of: a. making material relevant and meaningful; and b. providing information processing time.	Interactive Lecture	5 min	A0-118 (p. 10, p. G 1, p. G 2, p. K 1) C0-397 (p. 1) C0-398 (p. 31, p. 38)
TP2	Describe and identify the needs of the developmental periods (DP), to include: a. DP 1, b. DP 2, and c. DP 3.	Interactive Lecture	10 min	A0-118 (pp. 5– 7, p. 10, p. H 1, p. H 2 )

TP	Description	Method	Time	Refs
TP3	Conduct an activity where the cadets will describe and identify the needs of the different learning styles, to include: a. visual, b. kinaesthetic, and c. auditory.	In-Class Activity	20 min	A0-118 (pp. 5–7, p. 10, p. G 1, p. G 2, p. H 1, p. H 2, p. K 1)
TP4	Conduct an activity where the cadets will describe how to structure a lesson to meet the needs of the different types of learners.	In-Class Activity	15 min	A0-118 (p. 10, p. G 1, p. G 2, p. K 1)

5. **Time:**

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

6. **Substantiation:**

- An interactive lecture was chosen for TPs 1 and 2 to introduce, provoke thought and stimulate the cadets' interest in learner needs.
- An in-class activity was chosen for TPs 3 and 4 as it is an interactive way to provoke thought and stimulate interest in the different types of learners and how to meet their needs.

7. **References:**

- A0-118 Director Cadets 3. (2007). *Youth reference guide*. Ottawa, ON: Department of National Defence.
- C0-397 Belding, S. (2004). *Stickiness: Skills retention and synthesis*. Retrieved March 23, 2009 from [http://www.airs.org/files/public/Making\\_Training\\_Stick.pdf](http://www.airs.org/files/public/Making_Training_Stick.pdf)
- C0-398 ISBN I-57517-344-1 Burke, K. (2000). *What to do with the kid who....* Arlington Heights, IL: Skylight Professional Development.

8. **Training Aids:**

- Presentation aids (eg, whiteboard / flip chart / OHP) appropriate for the classroom / training area,
- Tiger comic slide,
- Learning pyramid handout,
- Developmental periods confirmation strips and answer key,
- Learning styles information sheet,
- Learning styles survey,
- Instructions to make a jumping frog,
- Instructions to make a triangle box,

- i. Schoolies comic strip,
- j. Instructor tips for learning styles worksheet,
- k. Instructor tips for learning styles answer key,
- l. Activities in Developmental Periods worksheet, and
- m. Activities in Developmental Periods answer key.
- n. Markers,
- o. Pen / pencil,
- p. Letter size paper,
- q. Square sized sticky notes (eg, size 3 inches by 3 inches),
- r. Sticky notes—4 inches by 6 inches, and
- s. Stopwatch.

9. **Learning Aids:**

- a. Learning pyramid handout,
- b. Learning styles information sheet,
- c. Learning styles survey,
- d. Instructor tips for learning styles worksheet,
- e. Activities in Developmental Periods worksheet, and
- f. Letter size paper,
- g. Square sized sticky notes (eg, size 3 inches by 3 inches), and
- h. Sticky notes—4 inches by 6 inches.

10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, 409 PC.

11. **Remarks:** Nil.

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**EO M409.04**

1. **Performance:** Explain Assessment
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 explain assessment, to include:
  - a. types of assessment, and
  - b. assessment instructions and instruments.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Explain types of assessment, to include: <ol style="list-style-type: none"> <li>a. assessment of learning, and</li> <li>b. assessment for learning.</li> </ol>	Interactive Lecture	10 min	A3-191 (p. 3-1, p. 3-2) C0-376 (pp. 21–28)
TP2	Describe assessment instructions and instruments.	Interactive Lecture	15 min	A3-191 (p. 3-3, p. 3-4, pp. 3B-1 to 3B-3, pp. 3B1-4 to 3B1-12)

5. **Time:**
  - a. Introduction / Conclusion: 5 min
  - b. Interactive Lecture: 25 min
  - c. Total: 30 min
6. **Substantiation:** An interactive lecture was chosen for this lesson as a way to introduce the cadets to assessment types, instructions and instruments, provoke thought and stimulate interest among cadets.
7. **References:**
  - a. A3-191 A-CR-CCP-803/PG-001 Director Cadets 3. (2008). *Proficiency level three qualification standard and plan*. Ottawa, ON: Department of National Defence.
  - b. C0-376 ISBN 0-7619-4626-8 Guskey, T., & Marzano, R. (2003). *Assessment as learning*. Thousand Oaks, CA: Corwin Press, Inc.

8. **Training Aids:**
  - a. Presentation aids (eg, whiteboard / flip chart / OHP) appropriate for the classroom / training area, and
  - b. Assessment handouts.
9. **Learning Aids:** Assessment handouts.
10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, 409 PC.
11. **Remarks:** Nil.

**EO M409.05**

1. **Performance:** Instruct a 30-Minute Lesson
2. **Conditions:**
  - a. Given:
    - (1) A lesson specification,
    - (2) An instructional guide, and
    - (3) Supervision.
  - b. Denied: Assistance.
  - c. Environmental: Classroom or training area large enough to accommodate the entire group.
3. **Standard:** The cadet shall instruct a 30-minute lesson by:
  - a. preparing the lesson;
  - b. introducing the lesson;
  - c. presenting the content of the lesson;
  - d. confirming the knowledge / skills learned during the lesson; and
  - e. concluding the lesson.
4. **Teaching Points:** Have the cadets instruct a 30-minute lesson by:
  - a. preparing the lesson;
  - b. introducing the lesson;
  - c. presenting the content of the lesson;
  - d. confirming the knowledge / skills learned during the lesson; and
  - e. concluding the lesson.
5. **Time:**

a. Introduction / Conclusion:	5 min
b. Practical Activity:	85 min
c. Total:	90 min
6. **Substantiation:** A practical activity was chosen for this lesson as it is an interactive way for cadets to develop instructional skills in a safe and controlled environment.
7. **References:** Nil.
8. **Training Aids:** Instructional Techniques Assessment Form.

9. **Learning Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP) appropriate for the classroom / training area, and
- b. Instructional Techniques Assessment Form.

10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, 409 PC.

11. **Remarks:**

- a. There is no instructional guide for this EO.
- b. Additional instructions regarding the conduct and assessment of this EO are located in Chapter 3, Annex B, 409 PC.
- c. The cadets shall instruct Proficiency Level One or Proficiency Level Two cadets during a regular training session.
- d. The course officer shall communicate with the training officer to:
  - (1) place the Proficiency Level Four cadets into the instructor schedule;
  - (2) ensure the cadets are assigned a lesson at least one week prior to conducting this EO, to include:
    - (a) a lesson specification, and
    - (b) an instructional guide; and
  - (3) adjust the period allocation for this EO if all three periods are not required for each Proficiency Level Four cadet to instruct a 30-minute lesson.
- e. Time for lesson planning for this EO is available in EO C409.01 (Plan a Lesson), should the course officer deem it necessary.
- f. Additional time for this EO is available in EO C409.02 (Instruct a 30-Minute Lesson).

**EO C409.01**

1. **Performance:** Plan a Lesson
2. **Conditions:**
  - a. Given:
    - (1) A lesson specification,
    - (2) An instructional guide, and
    - (3) Supervision.
  - b. Denied: Nil.
  - c. Environmental: Classroom or training area large enough to accommodate the entire group.
3. **Standard:** The cadet shall:
  - a. research lesson content; and
  - b. develop a lesson plan.
4. **Teaching Points:** Supervise and provide assistance while the cadets plan a lesson.
5. **Time:**

a. Introduction / Conclusion:	10 min
b. Practical Activity:	50 min
c. Total:	60 min
6. **Substantiation:** A practical activity was chosen to allow the cadets to plan a lesson in a structured and controlled environment. This activity contributes to the development of lesson-planning skills and will serve as preparation for EO M409.05 (Instruct a 30-Minute Lesson).
7. **References:** Nil.
8. **Training Aids:** Nil.
9. **Learning Aids:**
  - a. A lesson specification, and
  - b. An instructional guide.
10. **Test Details:** Nil.
11. **Remarks:**
  - a. This EO may be used as time to plan for EO M409.05 (Instruct a 30-Minute Lesson).
  - b. This EO should be scheduled at least one week prior to EO M409.05 (Instruct a 30-Minute Lesson).
  - c. There is no instructional guide for this EO.

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**EO C409.02**

1. **Performance:** Instruct a 30-Minute Lesson
2. **Conditions:**
  - a. Given:
    - (1) A lesson specification,
    - (2) An instructional guide, and
    - (3) Supervision.
  - b. Denied: Assistance.
  - c. Environmental: Classroom or training area large enough to accommodate the entire group.
3. **Standard:** The cadet shall instruct a 30-minute lesson by:
  - a. preparing the lesson;
  - b. introducing the lesson;
  - c. presenting the content of the lesson;
  - d. confirming the knowledge / skills learned during the lesson; and
  - e. concluding the lesson.
4. **Teaching Points:** Have the cadets instruct a 30-minute lesson by:
  - a. preparing the lesson;
  - b. introducing the lesson;
  - c. presenting the content of the lesson;
  - d. confirming the knowledge / skills learned during the lesson; and
  - e. concluding the lesson.
5. **Time:**

a. Introduction / Conclusion:	5 min
b. Practical Activity:	85 min
c. Total:	90 min
6. **Substantiation:** A practical activity was chosen for this lesson as it is an interactive way for cadets to develop instructional skills in a safe and controlled environment.
7. **References:** Nil.
8. **Training Aids:** Instructional Techniques Assessment Form.

9. **Learning Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP) appropriate for the classroom / training area, and
- b. Instructional Techniques Assessment Form.

10. **Test Details:** Nil.

11. **Remarks:**

- a. There is no instructional guide for this EO.
- b. This EO may serve as additional time to complete EO M409.05 (Instruct a 30-Minute Lesson) or as additional time for the cadets to practice instruction.
- c. The cadets shall instruct Proficiency Level One or Proficiency Level Two cadets on a regular training session.
- d. The course officer shall communicate with the training officer to:
  - (1) place the Proficiency Level Four cadets into the instructor schedule;
  - (2) ensure the cadets are assigned a lesson at least one week prior to conducting this EO, to include:
    - (a) a lesson specification, and
    - (b) an instructional guide; and
  - (3) the period allocation for this EO may be shortened if all three periods are not required for each Proficiency Level Four cadet to instruct a 30-minute lesson.
- e. Time for lesson planning for this EO is available in EO C409.01 (Plan a Lesson).



**EO C409.03**

1. **Performance:** Act as an Assistant Instructor
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 act as an assistant instructor, to include:
  - a. preparing training aids as required;
  - b. helping instruct the lesson;
  - c. supervising the cadets;
  - d. providing assistance as required; and
  - e. securing training aids as required.
4. **Teaching Points:** Have the cadets act as assistant instructors in on-the-job training (OJT), to include:
  - a. preparing training aids as required;
  - b. helping instruct the lesson;
  - c. supervising the cadets;
  - d. providing assistance as required; and
  - e. securing training aids as required.
5. **Time:** OJT: 90 min
6. **Substantiation:** OJT was chosen for this lesson as it allows the cadets to assist instructing a lesson in a safe and controlled environment. The OJT experience provides the cadets a practical application of learned skills in a realistic setting. The cadets reflect on the experience and receive feedback on the performance, which helps to shape future experiences. The cadets develop a sense of responsibility from the OJT aiding their development as a leader.
7. **References:** Nil.
8. **Training Aids:** Nil.
9. **Learning Aids:** Presentation aids (eg, whiteboard / flip chart / OHP) appropriate for the classroom / training area.
10. **Test Details:** Nil.
11. **Remarks:**
  - a. Prior to this EO, the course officer shall communicate with the training officer to ensure that cadets are paired with a Proficiency Level One, Two or Three instructor on a regular training session.

- b. A number of factors may exist based on the size of the squadron that will not allow for all Proficiency Level Four cadets to be scheduled for this EO at the same time. In this circumstance, special consideration should be given to minimize the cadet's absence from other areas of training. For example, scheduling half of the cadets for this EO while the other half is scheduled for EO C440.02 (Launch a Small Model Rocket) and reversing the schedule for the following training session.
- c. During this EO, the instructor shall:
  - (1) brief the cadet prior to commencing the lesson;
  - (2) assign the cadet tasks IAW Paragraph 3;
  - (3) monitor the cadet; and
  - (4) debrief the cadet at the end of the lesson.

**EO C409.04**

1. **Performance:** Participate in a Creative Lesson-Planning Workshop
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 participate in a creative lesson-planning workshop.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Conduct an activity where the cadets will define creativity.	In-Class Activity	15 min	C0-387 C0-389 C0-395
TP2	Have the cadets participate in activities that celebrate and encourage creativity.	In-Class Activity	10 min	C0-375
TP3	Conduct an activity where the cadets will identify the benefits of a creative lesson.	In-Class Activity	15 min	C0-381 C0-383
TP4	Conduct an activity where the cadets will identify the stages of the creative process.	In-Class Activity	20 min	C0-377 C0-388
TP5	Conduct an activity where the cadets will incorporate creativity into the lesson-planning process.	In-Class Activity	20 min	C0-375 (p. 10.15) C0-385 C0-386

5. **Time:**
  - a. Introduction / Conclusion: 10 min
  - b. In-Class Activity: 80 min
  - c. Total: 90 min
6. **Substantiation:** An in-class activity was chosen for this lesson as it is an interactive way to provoke thought and stimulate interest in the creative process and how to incorporate creativity into the lesson-planning process.

**7. References:**

- a. C0-375 ISBN 978-1-879097-10-0 Kagan, S., & Kagan, M. (2009). *Kagan cooperative learning*. San Clemente, CA: Kagan Publishing.
- b. C0-377 Canadian Yachting Association. (2002). *Level 2 technical coach manual*. Kingston, ON: Canadian Yachting Association.
- c. C0-381 McDonald, E. (2006). *How to involve and engage students*. Retrieved March 4, 2009, from [http://www.education-world.com/a\\_curr/columnists/mcdonald/mcdonald007.shtml](http://www.education-world.com/a_curr/columnists/mcdonald/mcdonald007.shtml)
- d. C0-383 Bell, A. (2007). *Creating a learning centered environment–Introduction*. Retrieved February 23, 2009, from <http://www.dialogueonlearning.tc3.edu/model/environment/Introduction-grp.htm>
- e. C0-385 Exalted Living. (2009). *Creativity on demand*. Retrieved March 3, 2009, from <http://www.exaltedliving.com/creativity.htm>
- f. C0-386 International Forum of Educational Technology & Society. (2006). *Integrating creativity into online university courses*. Retrieved February 11, 2009, from [http://ifets.ieee.org/discussions/discuss\\_september2006.html](http://ifets.ieee.org/discussions/discuss_september2006.html)
- g. C0-387 Beals, G. (1998). *Thomas Edison "Quotes"*. Retrieved March 9, 2009, from <http://www.thomasedison.com/index.html>
- h. C0-388 Schoenherr, N. (2007). *Being more creative in everyday life is simple, says author of 'Group Genius'*. Retrieved March 10, 2009, from <http://news-innfo.wustl.edu/tips/page/normal/9421.html>
- i. C0-389 Soria, R. (2009). *How to think like a genius*. Retrieved March 09, 2009, from <http://www.creativity-portal.com/howto/a/davinci/genius.html>
- j. C0-395 MindTools. (2009). *Approaches to creativity*. Retrieved March 16, 2009, from [http://www.mindtools.com/pages/article/newCT\\_00.htm](http://www.mindtools.com/pages/article/newCT_00.htm)

**8. Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP) appropriate for the classroom / training area,
- b. Mixer worksheet,
- c. Mixer worksheet Answer Key,
- d. Picture This worksheet,
- e. Cliché Stretching worksheet,
- f. Celebrate Success handout,
- g. The Benefits of Creative Lessons worksheet,
- h. The Benefits of Creative Lessons Answer Key,
- i. The Benefits of Creative Lessons phrase strips,
- j. The Creative Process handout,
- k. Forced Analogy worksheet,
- l. Forced Analogy Answer Key,

- m. Empty match box,
- n. Ways to Incorporate Creativity handout,
- o. Flip chart paper,
- p. Markers, and
- q. CD player.

9. **Learning Aids:**

- a. Mixer worksheet,
- b. Picture This worksheet,
- c. Cliché Stretching worksheet,
- d. Celebrate Success handout,
- e. The Benefits of Creative Lessons worksheet,
- f. The Creative Process handout,
- g. Forced Analogy worksheet,
- h. Empty match box,
- i. Ways to Incorporate Creativity handout,
- j. Flip chart paper, and
- k. Markers.

10. **Test Details:** Nil.

11. **Remarks:**

- a. This EO should be scheduled as one training session.
- b. This EO shall be conducted after EO M409.05 (Instruct a 30-Minute Lesson).

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**EO C409.05**

1. **Performance:** Act as an Assistant Drill Instructor
2. **Conditions:**
  - a. Given:
    - (1) Supervision, and
    - (2) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Drill hall or outdoor parade square in favourable weather.
3. **Standard:** The cadet shall act as an assistant drill instructor, to include:
  - a. preparing training aids as required;
  - b. helping instruct the lesson;
  - c. supervising the cadets;
  - d. providing assistance as required; and
  - e. securing training aids as required.
4. **Teaching Points:** Have the cadets act as assistant drill instructors in on-the-job training (OJT), to include:
  - a. preparing training aids as required;
  - b. helping instruct the lesson;
  - c. supervising the cadets;
  - d. providing assistance as required; and
  - e. securing training aids as required
5. **Time:** OJT: 90 min
6. **Substantiation:** OJT was chosen for this lesson as it allows the cadets to assist instructing a drill lesson in a safe and controlled environment. The OJT experience provides the cadets a practical application of learned skills in a realistic setting. The cadets reflect on the experience and receive feedback on the performance, which helps to shape future experiences. The cadets develop a sense of responsibility from the OJT aiding their development as a leader.
7. **References:** Nil.
8. **Training Aids:** Nil.
9. **Learning Aids:** Presentation aids (eg, whiteboard / flip chart / OHP) appropriate for the classroom / training area.
10. **Test Details:** Nil.
11. **Remarks:**
  - a. Prior to this EO, the course officer shall communicate with the training officer to ensure that cadets are paired with a Proficiency Level One, Two or Three instructor on a regular training session.

- b. A number of factors may exist based on the size of the squadron that will not allow for all Proficiency Level Four cadets to be scheduled for this EO at the same time. In this circumstance, special consideration should be given to minimize the cadet's absence from other areas of training. For example, scheduling half of the cadets for this EO while the other half is scheduled for EO C440.02 (Launch a Small Model Rocket) and reversing the schedule for the following training session.
- c. During this EO, the instructor shall:
  - (1) brief the cadet prior to commencing the lesson;
  - (2) assign the cadet tasks IAW Paragraph 3;
  - (3) monitor the cadet; and
  - (4) debrief the cadet at the end of the lesson.



**EO C409.06**

1. **Performance:** Instruct a 30-Minute Drill Lesson
2. **Conditions:**
  - a. Given:
    - (1) A lesson specification,
    - (2) An instructional guide, and
    - (3) Supervision.
  - b. Denied: Assistance.
  - c. Environmental: A drill hall or outdoor parade square in favourable weather.
3. **Standard:** IAW A-PD-201-000/PT-001, *Canadian Forces Manual of Drill and Ceremonial*, the cadet shall instruct a 30-minute drill lesson by:
  - a. preparing the lesson,
  - b. introducing the lesson;
  - c. presenting the content of the lesson;
  - d. applying the drill instruction sequence;
  - e. confirming the skills learning during the lesson;
  - f. concluding the lesson.
4. **Teaching Points:** Supervise while the cadets instruct a 30-minute drill lesson.
5. **Time:**

a. Introduction / Conclusion:	5 min
b. Practical Activity:	85 min
c. Total:	90 min
6. **Substantiation:** A practical activity was chosen for this lesson as it is an interactive way for cadets to develop drill instructional skills in a safe and controlled environment.
7. **References:** A0-002 A-PD-201-000/PT-000 Director History and Heritage 3-2. (2005). *The Canadian Forces manual of drill and ceremonial*. Ottawa, ON: Department of National Defence.
8. **Training Aids:** Drill Instructional Techniques Assessment Form.
9. **Learning Aids:** Drill Instructional Techniques Assessment Form.
10. **Test Details:** Nil.
11. **Remarks:**
  - a. This EO shall be conducted after C309.04 (Identify Formations for Drill Instruction), EO C309.05 (Plan a Drill Lesson) and EO C309.06 (Instruct a 15-Minute Drill Lesson).

- b. The cadets shall instruct Proficiency Level One or Proficiency Level Two cadets on a regular training session.
- c. The course officer shall communicate with the training officer to:
  - (1) place the Proficiency Level Four cadets into the instructor schedule; and
  - (2) ensure the cadets are assigned a lesson at least one week prior to conducting this EO, to include:
    - (a) a lesson specification, and
    - (b) an instructional guide.
- d. Time for lesson planning for this EO is available in EO C309.05 (Plan a Drill Lesson), should the course officer deem it necessary.
- e. Adjust the period allocation for this EO if all three periods are not required for each Proficiency Level Four cadet to instruct a 30-minute drill lesson.

**CANADIAN ARMED FORCES (CAF) FAMILIARIZATION**

**1. PO X20 – Participate in CAF Familiarization Activities**

This PO and its associated EOs are located in A-CR-CCP-801/PG-001, *Royal Canadian Air Cadets Proficiency Level One Qualification Standard and Plan*.

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**PO 429**

1. **Performance:** Communicate Using Radio Procedures for Aviation Transmission
2. **Conditions:**
  - a. Given:
    - (1) Hand-held radio,
    - (2) Supervision, and
    - (3) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Classroom or training area large enough to accommodate the entire group.
3. **Standard:** IAW the *Study Guide for the Radiotelephone Operator's Restricted Certificate (Aeronautical) [ROC-A]*, the cadet shall communicate using radio procedures for aviation transmission.
4. **Remarks:**
  - a. No fees will be levied by approved examiners on behalf of Industry Canada for giving the examination for the ROC-A.
  - b. The Training Officer or Commanding Officer (CO) must locate and obtain the services of a qualified examiner by contacting Industry Canada at [www.ic.gc.ca](http://www.ic.gc.ca).
  - c. If the squadron wishes to have a staff member apply to become a qualified examiner, contact Industry Canada at [www.ic.gc.ca](http://www.ic.gc.ca).
5. **Complementary Material:**
  - a. PO 429 (Communicate Using Radio Procedures for Aviation Transmission) is a complementary package designed to provide the cadet an opportunity to communicate using radio procedures during aviation transmission.
  - b. If the squadron chooses to have cadets obtain the ROC-A, all complementary material must be instructed, and a qualified examiner must conduct 429 PC.

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**EO C429.01**

1. **Performance:** Explain Regulations and Operating Procedures for Aviation Transmission and Licensing
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 explain regulations and operating procedures for aviation transmission and licensing, to include:
  - a. priorities, privacy, and control of communication;
  - b. time, date, and transmission of numbers;
  - c. call signs, air carriers, civil registration, and ground stations; and
  - d. calling procedures.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Explain priorities, privacy, and control of communication.	Interactive Lecture	5 min	C3-116 (pp. 219–220) C3-182 (pp. 2–4)
TP2	Explain time, date, and transmission of numbers.	Interactive Lecture	5 min	C3-116 (p. 218) C3-182 (pp. 5–8)
TP3	Explain operating procedures, to include: <ol style="list-style-type: none"> <li>a. words and phrases,</li> <li>b. call signs,</li> <li>c. air carriers,</li> <li>d. civil registration, and</li> <li>e. ground stations.</li> </ol>	Interactive Lecture	5 min	C3-116 (p. 219) C3-182 (pp. 8–9, pp. 24–25)
TP4	Explain calling procedures, to include: <ol style="list-style-type: none"> <li>a. single station call,</li> <li>b. all station general call,</li> <li>c. multiple station call,</li> <li>d. replying,</li> <li>e. corrections and repetitions,</li> </ol>	Interactive Lecture	10 min	C3-182 (pp. 9–13)

TP	Description	Method	Time	Refs
	f. message handling procedures, and g. signal (or radio) checks			

5. **Time:**

- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 5 min  |
| b. | Interactive Lecture:       | 25 min |
| c. | Total:                     | 30 min |

6. **Substantiation:** An interactive lecture was chosen for this lesson to clarify, emphasize, and summarize regulations and operating procedures for aviation transmission and licensing.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. C3-182 *Study Guide for the Radiotelephone Operator's Restricted Certificate (Aeronautical)*. (2008). Retrieved September 28, 2008, from [www.ic.gc.ca/epic/site/smt-gst.nsf/en/sf01397e.html](http://www.ic.gc.ca/epic/site/smt-gst.nsf/en/sf01397e.html)

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for classroom / training area.
- b. Study Guide for the Radiotelephone Operator's Restricted Certificate (Aeronautical) (ROC-21).

9. **Learning Aids:** *Study Guide for the Radiotelephone Operator's Restricted Certificate (Aeronautical) (ROC-21).*10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, 429 PC.11. **Remarks:**

- a. If the squadron chooses to have cadets obtain the ROC-A, all complementary EOs for this PO must be instructed, and a qualified examiner must conduct 429 PC.
- b. Cadets who are qualified Advanced Aviation may assist with this instruction.



**EO C429.02**

1. **Performance:** Communicate Using Radio Procedures for Aviation Transmission
2. **Conditions:**
  - a. Given:
    - (1) Hand-held radio,
    - (2) Supervision, and
    - (3) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Classroom or training area large enough to accommodate the entire group.
3. **Standard:** The cadet shall communicate using radio procedures for aviation transmission, to include:
  - a. standard phrases,
  - b. priority of communication, and
  - c. radio check.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Explain the standard phrases used in a radio message, to include: <ol style="list-style-type: none"> <li>a. acknowledge,</li> <li>b. affirmative,</li> <li>c. break,</li> <li>d. confirm,</li> <li>e. correction,</li> <li>f. do you read,</li> <li>g. go ahead,</li> <li>h. how do you read,</li> <li>i. I say again,</li> <li>j. negative,</li> <li>k. out,</li> <li>l. over,</li> <li>m. read back,</li> <li>n. roger,</li> <li>o. say again,</li> <li>p. speak slower,</li> <li>q. stand by,</li> <li>r. that is correct,</li> </ol>	Interactive Lecture	5 min	C3-116 (p. 219) C3-182 (p. 24)

TP	Description	Method	Time	Refs
	<ul style="list-style-type: none"> <li>s. verify, and</li> <li>t. WILCO.</li> </ul>			
TP2	<p>Explain priority of communication, to include:</p> <ul style="list-style-type: none"> <li>a. emergency communications,</li> <li>b. flight safety communications,</li> <li>c. scheduled broadcasts,</li> <li>d. unscheduled broadcasts, and</li> <li>e. other air-ground communications.</li> </ul>	Interactive Lecture	5 min	C3-116 (pp. 107, 110–111, 164, 170–171, 219–220)
TP3	<p>Explain emergency transmissions, to include:</p> <ul style="list-style-type: none"> <li>a. distress calls,</li> <li>b. urgency calls, and</li> <li>c. safety calls.</li> </ul>	Interactive Lecture	5 min	C3-116 (pp. 225–226) C3-182 (pp. 14–23)
TP4	<p>Explain a radio check, to include:</p> <ul style="list-style-type: none"> <li>a. readability, to include:               <ul style="list-style-type: none"> <li>(1) unreadable,</li> <li>(2) readable now and then,</li> <li>(3) readable with difficulty,</li> <li>(4) readable, and</li> <li>(5) perfectly readable; and</li> </ul> </li> <li>b. strength, to include:               <ul style="list-style-type: none"> <li>(1) bad,</li> <li>(2) poor,</li> <li>(3) fair,</li> <li>(4) good, and</li> <li>(5) excellent.</li> </ul> </li> </ul>	Interactive Lecture	5 min	C3-116 (p. 220) C3-182 (pp. 13–14)
TP5	<p>Have the cadets, in pairs, conduct station-to-station calls using the ITU phonetic alphabet and numbers, and conduct a signal check, to include:</p> <ul style="list-style-type: none"> <li>a. turning the radio on;</li> <li>b. using message parts, to include:               <ul style="list-style-type: none"> <li>(1) initiating a call with "____" this is "____", over;</li> <li>(2) answering a call with "____" this is "____", go ahead, over";</li> <li>(3) requesting a signal check on a different frequency;</li> </ul> </li> </ul>	In-Class Activity	5 min	

TP	Description	Method	Time	Refs
	(4) responding to the request; and (5) acknowledging the call and ending the call with "out"; c. using radio techniques; and d. turning the radio off.			

5. **Time:**

- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 5 min  |
| b. | Interactive Lecture:       | 20 min |
| c. | In-Class Activity:         | 5 min  |
| d. | Total:                     | 30 min |

6. **Substantiation:**

- An interactive lecture was chosen for TPs 1–4 to clarify, emphasize and summarize radio procedures for aviation transmission.
- An in-class activity was chosen for TP 5 as an interactive way to confirm the cadets' comprehension of radio procedures for aviation transmission.

7. **References:**

- 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.
- C3-182 *Study Guide for the Radiotelephone Operator's Restricted Certificate (Aeronautical)*. (2008). Retrieved September 28, 2008, from [www.ic.gc.ca/epic/site/smt-gst.nsf/en/sf01397e.html](http://www.ic.gc.ca/epic/site/smt-gst.nsf/en/sf01397e.html)

8. **Training Aids:** Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for classroom / training area.

9. **Learning Aids:**

- Hand-held radio,
- Pen / pencil, and
- Radio Activity handout.

10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, 429 PC.

11. **Remarks:**

- If the squadron chooses to have cadets obtain the ROC-A, all complementary EOs for this PO must be instructed, and a qualified examiner must conduct 429 PC.
- Cadets who are qualified Advanced Aviation may assist with this instruction.

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**EO C429.03**

1. **Performance:** Describe Radio Wavelengths, Signals, Licences and Equipment
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 describe:
  - a. radio wavelengths, frequencies and bands;
  - b. characteristics of radio signals;
  - c. aeronautical terms and definitions;
  - d. radio station licences; and
  - e. maintenance of equipment.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Describe radio wavelengths, frequencies and bands, to include: <ol style="list-style-type: none"> <li>a. cycle;</li> <li>b. kilohertz;</li> <li>c. megahertz;</li> <li>d. low, medium, high, very high, and ultra high frequencies; and</li> <li>e. frequency allocation.</li> </ol>	Interactive Lecture	5 min	C3-116 (pp. 207–209)
TP2	Describe characteristics of radio signals, to include: <ol style="list-style-type: none"> <li>a. ground waves, and</li> <li>b. sky waves.</li> </ol>	Interactive Lecture	5 min	C3-116 (p. 210)
TP3	Describe aeronautical terms and definitions, to include: <ol style="list-style-type: none"> <li>a. aerodrome,</li> <li>b. aeronautical service,</li> <li>c. aircraft station,</li> <li>d. Aeronautical Operation Control Communications (AOCC),</li> </ol>	Interactive Lecture	5 min	C3-182 (pp. 22–23)

TP	Description	Method	Time	Refs
	e. aeronautical station, f. Air Traffic Control (ATC) Service, g. controlled aerodrome, h. flight service station (FSS), i. General Aviation Communication (GAC), j. ground control communication, k. private advisory service, and l. private multiple station.			
TP4	Describe radio station licences, to include: a. call sign, b. frequencies, c. special conditions, d. equipment, and e. fines.	Interactive Lecture	5 min	C3-116 (p. 218) C3-182 (p. 27)
TP5	Describe maintenance of equipment, to include: a. transceiver (transmitter and receiver), b. speaker (headset), c. microphone and antenna connections, and d. fuses.	Interactive Lecture	5 min	C3-116 (pp. 211–212) C3-182 (p. 26)

5. **Time:**

- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 5 min  |
| b. | Interactive Lecture:       | 25 min |
| c. | Total:                     | 30 min |

6. **Substantiation:** An interactive lecture was chosen for this lesson to orient the cadets to the topic of radio wavelengths, signals, licences, and equipment and to create interest in the subject.

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. C3-182 *Study guide for the radiotelephone operator's restricted certificate (Aeronautical)*. (2008). Retrieved September 28, 2008, from [www.ic.gc.ca/epic/site/smt-gst.nsf/en/sf01397e.html](http://www.ic.gc.ca/epic/site/smt-gst.nsf/en/sf01397e.html)

8. **Training Aids:** Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for classroom / training area.

9. **Learning Aids:**

- a. Handouts, and
- b. Pen / pencils.

10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, 429 PC.
11. **Remarks:**
  - a. If the squadron chooses to have cadets obtain the ROC-A, all complementary EOs for this PO must be instructed, and a qualified examiner must conduct 429 PC.
  - b. Cadets who are qualified Advanced Aviation may assist with this instruction.

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**EO C429.04**

1. **Performance:** Explain Emergency, Urgency and Safety Communications
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 explain emergency, urgency and safety communications.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Explain emergency communication, to include: <ol style="list-style-type: none"> <li>a. distress call,</li> <li>b. priority,</li> <li>c. frequencies to use,</li> <li>d. distress message,</li> <li>e. repetition of distress message,</li> <li>f. action by station in distress,</li> <li>g. action by stations other than the station in distress,</li> <li>h. distress traffic,</li> <li>i. acknowledge of receipt of a distress message,</li> <li>j. action by stations acknowledging receipt of a distress message,</li> <li>k. relay of a distress message,</li> <li>l. imposition of silence, and</li> <li>m. cancellation of distress.</li> </ol>	Interactive Lecture	15 min	C3-116 (pp. 225–226) C3-182 (pp. 15–20)
TP2	Explain urgency and safety communications, to include: <ol style="list-style-type: none"> <li>a. urgency call,</li> <li>b. priority,</li> <li>c. frequencies to use,</li> <li>d. urgency message,</li> <li>e. reply to urgency message,</li> </ol>	Interactive Lecture	10 min	C3-116 (p. 226) C3-182 (pp. 20–21)

TP	Description	Method	Time	Refs
	f. cancellation of urgency message, and g. safety signal.			

5. **Time:**

- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 5 min  |
| b. | Interactive Lecture:       | 25 min |
| c. | Total:                     | 30 min |

6. **Substantiation:** An interactive lecture was chosen for this lesson to clarify, emphasize, and summarize emergency, urgency and safety communications.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. C3-182 *Study Guide for the Radiotelephone Operator's Restricted Certificate (Aeronautical)*. (2008). Retrieved September 28, 2008, from [www.ic.gc.ca/epic/site/smt-gst.nsf/en/sf01397e.html](http://www.ic.gc.ca/epic/site/smt-gst.nsf/en/sf01397e.html)

8. **Training Aids:** Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for classroom / training area.9. **Learning Aids:** Nil.10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, 429 PC.11. **Remarks:**

- a. If the squadron chooses to have cadets obtain the ROC-A, all complementary EOs for this PO must be instructed, and a qualified examiner must conduct 429 PC.
- b. Cadets who are qualified Advanced Aviation may assist with this instruction.

**PO 431**

1. **Performance:** Explain Principles of Flight
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 will explain principles of flight by:
  - a. explaining features of wing design; and
  - b. describing flight instruments.
4. **Remarks:** Nil.
5. **Complementary Material:**
  - a. Complementary material associated with PO 431 is designed to enhance the cadet's knowledge of principles of flight, specifically:
    - (1) EO C431.01 (Explain Flight Performance Factors),
    - (2) EO C431.02 (Demonstrate Turns, Climbs and Descents in a Flight Simulator), and
    - (3) EO C431.03 (Fly a Radio-Controlled Aircraft).
  - b. Complementary material from PO 331 that was not conducted in the previous year may be selected as complementary training in Proficiency Level Four.

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**EO M431.01**

1. **Performance:** Explain Features of Wing Design
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 explain features of wing design, to include:
  - a. airfoils,
  - b. high-lift devices, and
  - c. spoilers and speed brakes.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Explain airfoils, to include: <ol style="list-style-type: none"> <li>a. chord,</li> <li>b. conventional airfoils,</li> <li>c. laminar flow airfoils,</li> <li>d. planform,</li> <li>e. aspect ratio,</li> <li>f. angle of incidence,</li> <li>g. wash-out, and</li> <li>h. wash-in.</li> </ol>	Interactive Lecture	10 min	C3-116 (pp. 26–27)
TP2	Explain high-lift devices, to include: <ol style="list-style-type: none"> <li>a. wing-tip design,</li> <li>b. wing fences,</li> <li>c. slats,</li> <li>d. slots, and</li> <li>e. flaps.</li> </ol>	Interactive Lecture	10 min	C3-116 (pp. 27–30)
TP3	Explain spoilers and speed brakes.	Interactive Lecture	5 min	C3-116 (p. 28)

5. **Time:**
- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 5 min  |
| b. | Interactive Lecture:       | 25 min |
| c. | Total:                     | 30 min |
6. **Substantiation:** An interactive lecture was chosen for this lesson to clarify, emphasize, and summarize features of wing design.
7. **References:** 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.
8. **Training Aids:**
- Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area,
  - Model of a light fixed-wing aircraft with wing struts, fixed gear and control surface detail, and
  - Model of a wing.
9. **Learning Aids:** Nil.
10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, Aviation Subjects—Combined Assessment PC.
11. **Remarks:** Cadets who are qualified Advanced Aviation may assist with this instruction.

**EO M431.02**

1. **Performance:** Describe Flight Instruments
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 describe flight instruments, to include:
  - a. reviewing pitot static systems and instruments;
  - b. describing the gyroscope and gyroscopic instruments;
  - c. describing angle of attack indicator; and
  - d. describing Mach indicator.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Review the pitot static system and pitot static instruments: <ol style="list-style-type: none"> <li>a. airspeed indicator (ASI),</li> <li>b. altimeter, and</li> <li>c. vertical speed indicator (VSI).</li> </ol>	Interactive Lecture	25 min	C3-116 (pp. 39–45)
TP2	Describe the gyroscope and gyroscopic instruments: <ol style="list-style-type: none"> <li>a. heading indicator,</li> <li>b. attitude indicator,</li> <li>c. turn and slip indicator, and</li> <li>d. turn co-ordinator.</li> </ol>	Interactive Lecture	15 min	C3-116 (pp. 45–49)
TP3	Describe the angle of attack (AOA) indicator.	Interactive Lecture	5 min	C3-116 (p. 49)
TP4	Describe the Mach indicator.	Interactive Lecture	5 min	C3-116 (p. 50)

5. **Time:**
  - a. Introduction / Conclusion: 10 min
  - b. Interactive Lecture: 50 min
  - c. Total: 60 min

6. **Substantiation:** An interactive lecture was chosen for this lesson to clarify, emphasize, and summarize flight instruments.
7. **References:** 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.
8. **Training Aids:**
  - a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area,
  - b. Large mock-up of an ASI,
  - c. Large mock-up of an altimeter,
  - d. Large mock-up of a VSI, and
  - e. Gyroscope.
9. **Learning Aids:** Nil.
10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, Aviation Subjects-Combined Assessment PC.
11. **Remarks:** Cadets who are qualified Advanced Aviation may assist with this instruction.



**EO C431.01**

1. **Performance:** Explain Flight Performance Factors
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 explain flight performance factors, to include:
  - a. left turning tendencies,
  - b. climbs and glides,
  - c. turns,
  - d. stalls, spins, and spirals, and
  - e. airspeed limitations.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Explain the following left turning tendencies: <ol style="list-style-type: none"> <li>a. torque,</li> <li>b. asymmetric thrust,</li> <li>c. precession, and</li> <li>d. slipstream.</li> </ol>	Interactive Lecture	15 min	C3-116 (pp. 32–33)
TP2	Explain climbs and glides.	Interactive Lecture	10 min	C3-116 (pp. 33–34)
TP3	Explain turns.	Interactive Lecture	5 min	C3-116 (pp. 34–35)
TP4	Explain stalls, spins, and spirals.	Interactive Lecture	15 min	C3-116 (pp. 35–38)
TP5	Explain airspeed limitations.	Interactive Lecture	5 min	C3-116 (pp. 38–39)

5. **Time:**
  - a. Introduction / Conclusion: 10 min
  - b. Interactive Lecture: 50 min
  - c. Total: 60 min

6. **Substantiation:** An interactive lecture was chosen for this lesson to clarify, emphasize, and summarize flight performance factors.
7. **References:** 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.
8. **Training Aids:**
  - a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area, and
  - b. Model aircraft with articulated control surfaces and flaps.
9. **Learning Aids:** Nil.
10. **Test Details:** Nil.
11. **Remarks:** Cadets who are qualified Advanced Aviation may assist with this instruction.

**EO C431.02**

1. **Performance:** Demonstrate Turns, Climbs and Descents in a Flight Simulator
2. **Conditions:**
  - a. Given:
    - (1) Flight simulator,
    - (2) Supervision, and
    - (3) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Classroom or training area large enough to accommodate the entire group.
3. **Standard:** The cadet shall demonstrate turns, climbs and descents in a flight simulator.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Explain any safety considerations related to the location or design of the flight simulator.	Interactive Lecture	5 min	C3-156
TP2	Explain: <ol style="list-style-type: none"> <li>a. how to manipulate the necessary control inputs, to include:               <ol style="list-style-type: none"> <li>(1) the control column or yoke,</li> <li>(2) the rudder pedals, and</li> </ol> </li> <li>b. the location of necessary instruments, to include:               <ol style="list-style-type: none"> <li>(1) the airspeed indicator (ASI),</li> <li>(2) the vertical speed indicator (VSI),</li> <li>(3) the altimeter, and</li> <li>(4) the turn coordinator.</li> </ol> </li> </ol>	Interactive Lecture	10 min	C3-139 C3-156
TP3	Explain, demonstrate and have the cadets practice turns, climbs and descents using a flight simulator.	Demonstration and Performance	70 min	

5. **Time:**
  - a. Introduction / Conclusion: 5 min
  - b. Interactive Lecture: 15 min
  - c. Demonstration and Performance: 70 min
  - d. Total: 90 min

6. **Substantiation:**

- a. An interactive lecture was chosen for TPs 1 and 2 to give direction on procedures and present basic or background information about flight simulation.
- b. A demonstration and performance was chosen for TP 3 as it allows the instructor to explain and demonstrate turns, climbs and descents in a flight simulator while providing an opportunity for the cadets to practice the skills under supervision.

7. **References:**

- a. C3-139 ISBN 0-7715511-5-0 Transport Canada. (1999). *Flight training manual 4th edition revised*. Ottawa, ON: Transport Canada.
- b. C3-156 *Computerized Aircraft Simulation Center*. (2007). Retrieved October 2, 2007, from [http://www.regions.cadets.forces.gc.ca/pac/aircad/flight/casc\\_lessons\\_e.asp](http://www.regions.cadets.forces.gc.ca/pac/aircad/flight/casc_lessons_e.asp)

8. **Training Aids:** Flight simulator.

9. **Learning Aids:** Flight simulator.

10. **Test Details:** Nil.

11. **Remarks:**

- a. All staff should be familiarized with the operation of the flight simulator prior to the cadets arriving. This will allow them to troubleshoot, and give them a better perspective for instructing.
- b. Additional instructors are required for this lesson. There should be one instructor per two flight simulators.
- c. Cadets who are qualified Advanced Aviation may assist with this instruction.

**EO C431.03**

1. **Performance:** Fly a Radio-Controlled Aircraft
2. **Conditions:**
  - a. Given:
    - (1) Radio-controlled aircraft,
    - (2) Supervision, and
    - (3) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Large indoor area (eg, gymnasium or drill hall) or a large outdoor area for flying a radio-controlled aircraft.
3. **Standard:** The cadet shall fly a radio-controlled aircraft.
4. **Teaching Points:** IAW the instructions supplied with the radio-controlled aircraft and the Model Aeronautics Association of Canada (MAAC) safety code, have the cadet fly a radio-controlled aircraft.
5. **Time:**

a. Introduction / Conclusion:	10 min
b. Practical Activity:	80 min
c. Total:	90 min
6. **Substantiation:** A practical activity was chosen for this lesson as it is an interactive way to introduce the cadets to flying a radio-controlled aircraft in a safe and controlled environment. This activity contributes to the development of skills and knowledge in a fun and challenging setting.
7. **References:** C3-303 *Model Aeronautics Association of Canada Safety Code*. (2008). Retrieved February 5, 2009, from [http://www.maac.ca/docs/2007/maac\\_safety\\_code\\_v008sept30\\_08\\_english.pdf](http://www.maac.ca/docs/2007/maac_safety_code_v008sept30_08_english.pdf)
8. **Training Aids:** Radio-controlled aircraft.
9. **Learning Aids:** Radio-controlled aircraft.
10. **Test Details:** Nil.
11. **Remarks:**
  - a. It is recommended that the three periods required for this EO be scheduled consecutively.
  - b. The radio-controlled aircraft can be flown individually or in small groups of two to four cadets.
  - c. Assistant instructors are required for this lesson.
  - d. Suitable model aircraft may be chosen from the following:
    - (1) Blade CX2 / CX3 (radio-controlled electric helicopter),
    - (2) Blade MCX (radio-controlled electric helicopter),
    - (3) SPAD Debonair (radio-controlled airplane),

- (4) Alpha 40 DSM2 RTF (radio-controlled airplane),
  - (5) Vapor Bind-N-Fly / RTF (radio-controlled airplane), and / or
  - (6) an alternate choice (or choices) selected by the Squadron CO.
- e. The helicopter being selected should have the counter-rotating rotor system with a 2.4 GHz radio transmitter.
- f. Radio-controlled aircraft simulators such as RealFlight (Knife Edge Software) or FS One (Hangar 9) that run on a personal computer may also be used.

**PO 432**

1. **Performance:** Describe Aero Engine Systems
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 will describe aero engine systems, to include:
  - a. fuel systems,
  - b. propeller systems, and
  - c. engine instruments.
4. **Remarks:** Nil.
5. **Complementary Material:** Complementary material associated with PO 432 is designed to enhance the cadet's knowledge of aero engines, specifically:
  - a. EO C432.01 (Describe Ignition and Electrical Systems),
  - b. EO C432.02 (Describe Turbocharging and Supercharging Systems), and
  - c. EO C432.03 (Describe Gas Turbine Engines).

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**EO M432.01**

1. **Performance:** Describe Fuel Systems
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 describe fuel systems, to include:
  - a. carburetors, and
  - b. fuel injection.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Describe fuel systems.	Interactive Lecture	10 min	C3-116 (pp. 59–61)
TP2	Describe carburetors.	Interactive Lecture	10 min	C3-116 (pp. 61–68)
TP3	Describe fuel injection.	Interactive Lecture	5 min	C3-116 (pp. 68–69)

5. **Time:**
  - a. Introduction / Conclusion: 5 min
  - b. Interactive Lecture: 25 min
  - c. Total: 30 min
6. **Substantiation:** An interactive lecture was chosen for this lesson to clarify, emphasize, and summarize fuel systems.
7. **References:** C3-116 ISBN 0-9680390-5-7 MacDonald, A. F., & Pepler, I. L. (2000). *From the ground up: Millennium edition*. Ottawa, ON: Aviation Publishers Co. Limited.
8. **Training Aids:** Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area.
9. **Learning Aids:** Nil.
10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, Aviation Subjects—Combined Assessment PC.
11. **Remarks:** Cadets who are qualified Advanced Aviation may assist with this instruction.

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**EO M432.02**

1. **Performance:** Describe Propeller Systems
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 describe propeller systems, to include:
  - a. propeller types,
  - b. feathering, and
  - c. propeller reversing.

4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Describe propeller systems.	Interactive Lecture	10 min	C3-116 (pp. 72–73)
TP2	Describe types of propellers, to include: <ol style="list-style-type: none"> <li>a. fixed pitch, and</li> <li>b. variable pitch.</li> </ol>	Interactive Lecture	10 min	C3-116 (pp. 73–75)
TP3	Describe feathering and propeller reversing.	Interactive Lecture	5 min	C3-116 (p. 75)

5. **Time:**

- a. Introduction / Conclusion: 5 min
- b. Interactive Lecture: 25 min
- c. Total: 30 min

6. **Substantiation:** An interactive lecture was chosen for this lesson to clarify, emphasize, and summarize propeller systems.
7. **References:** 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.
8. **Training Aids:** Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area.
9. **Learning Aids:** Nil.

10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, Aviation Subjects—Combined Assessment PC.
11. **Remarks:** Nil.

**EO M432.03**

1. **Performance:** Describe Engine Instruments
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 describe engine instruments, to include:
  - a. oil pressure gauge,
  - b. oil temperature gauge,
  - c. cylinder head temperature gauge,
  - d. tachometer, and
  - e. manifold pressure gauge.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Describe the oil pressure and oil temperature gauges.	Interactive Lecture	5 min	C3-116 (pp. 75–76)
TP2	Describe the cylinder head temperature gauge.	Interactive Lecture	5 min	C3-116 (p. 76)
TP3	Describe the tachometer.	Interactive Lecture	5 min	C3-116 (pp. 76–77)
TP4	Describe the manifold pressure gauge.	Interactive Lecture	5 min	C3-116 (pp. 77–79)
TP5	Conduct an in-class activity to review aero engines.	In-Class Activity	5 min	

5. **Time:**
  - a. Introduction / Conclusion: 5 min
  - b. Interactive Lecture: 20 min
  - c. In-Class Activity: 5 min
  - d. Total: 30 min

6. **Substantiation:**
  - a. An interactive lecture was chosen for TPs 1–4 to clarify, emphasize, and summarize engine instruments.
  - b. An in-class activity was chosen for TP 5 as it is an interactive way to reinforce the topic and confirm the cadets' comprehension of aero engine systems.
7. **References:** 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.
8. **Training Aids:** Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area.
9. **Learning Aids:**
  - a. Pen / pencil, and
  - b. Aero Engine Review worksheet.
10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, Aviation Subjects—Combined Assessment PC.
11. **Remarks:** Nil.

**EO C432.01**

1. **Performance:** Describe Ignition and Electrical Systems
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 describe ignition and electrical systems.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Describe the ignition system.	Interactive Lecture	15 min	C3-116 (pp. 69–71)
TP2	Describe the electrical system.	Interactive Lecture	10 min	C3-116 (pp. 71–72)

5. **Time:**
  - a. Introduction / Conclusion: 5 min
  - b. Interactive Lecture: 25 min
  - c. Total: 30 min
6. **Substantiation:** An interactive lecture was chosen for this lesson to clarify, emphasize, and summarize the ignition and electrical systems.
7. **References:** 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.
8. **Training Aids:** Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area.
9. **Learning Aids:** Nil.
10. **Test Details:** Nil.
11. **Remarks:** Cadets who are qualified Advanced Aviation may assist with this instruction.

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**EO C432.02**

1. **Performance:** Describe Turbocharging and Supercharging Systems

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 describe turbocharging and supercharging systems.

4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Describe turbocharging.	Interactive Lecture	10 min	C3-116 (pp. 54–55)
TP2	Describe supercharging.	Interactive Lecture	5 min	C3-116 (pp. 55–56)
TP3	Conduct an in-class activity to confirm the cadets' comprehension of turbocharging and supercharging.	In-Class Activity	10 min	

5. **Time:**

- |                               |        |
|-------------------------------|--------|
| a. Introduction / Conclusion: | 5 min  |
| b. Interactive Lecture:       | 15 min |
| c. In-Class Activity          | 10 min |
| d. Total:                     | 30 min |

6. **Substantiation:**

- a. An interactive lecture was chosen for TPs 1 and 2 to clarify, emphasize, and summarize turbocharging and supercharging systems.
- b. An in-class activity was chosen for TP 3 to confirm the cadets' comprehension of turbocharging and supercharging.

7. **References:** 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.

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area,
- b. Turbocharging and Supercharging Worksheet, and
- c. Turbocharging and Supercharging Worksheet Answer Key.

9. **Learning Aids:**

- a. Pen / pencil, and
- b. Turbocharging and Supercharging Worksheet.

10. **Test Details:** Nil.

11. **Remarks:** Cadets who are qualified Advanced Aviation may assist with this instruction.

**EO C432.03**

1. **Performance:** Describe Gas Turbine Engines
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 describe gas turbine engines, to include:
  - a. turbojets,
  - b. turbofans,
  - c. turboprops, and
  - d. turboshafts.

4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Describe turbojets.	Interactive Lecture	10 min	C3-116 (pp. 86–87)
TP2	Describe turbofans.	Interactive Lecture	10 min	C3-116 (pp. 87–88)
TP3	Describe turboprops and turboshafts.	Interactive Lecture	5 min	C3-116 (p. 87)

5. **Time:**

- a. Introduction / Conclusion: 5 min
- b. Interactive Lecture: 25 min
- c. Total: 30 min

6. **Substantiation:** An interactive lecture was chosen for this lesson to clarify, emphasize, and summarize gas turbine engines.
7. **References:** 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.
8. **Training Aids:** Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area.
9. **Learning Aids:** Nil.

10. **Test Details:** Nil.
11. **Remarks:** Nil.

**PO 436**

1. **Performance:** Explain Aspects of Meteorology
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 will explain aspects of meteorology, to include:
  - a. air masses and fronts, and
  - b. winds.
4. **Remarks:** Nil.
5. **Complementary Material:**
  - a. Complementary material associated with PO 436 is designed to enhance the cadet's knowledge of meteorology, specifically:
    - (1) EO C436.01 (Explain Fog),
    - (2) EO C436.02 (Describe Severe Weather Conditions), and
    - (3) EO C436.03 (Analyze Weather Information).
  - b. Complementary material from PO 336 that was not conducted in the previous year may be selected as complementary training in Proficiency Level Four.

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**EO M436.01**

1. **Performance:** Explain Winds
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 explain winds, to include:
  - a. surface winds, and
  - b. jet streams.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Explain surface winds, to include: <ol style="list-style-type: none"> <li>a. katabatic and anabatic winds,</li> <li>b. mountain waves, and</li> <li>c. gusts and squalls.</li> </ol>	Interactive Lecture	15 min	C3-116 (pp. 130–132)
TP2	Describe jet streams.	Interactive Lecture	10 min	C3-116 (pp. 134–135) C3-334

5. **Time:**
  - a. Introduction / Conclusion: 5 min
  - b. Interactive Lecture: 25 min
  - c. Total: 30 min
6. **Substantiation:** An interactive lecture was chosen for this lesson to orient the cadets to winds and generate interest in the subject.
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. C3-334 Short N. (2005). Remote Sensing Tutorial. *Federation of American Scientists*. Retrieved February 26, 2009, from [http://www.fas.org/irp/imint/docs/rst/Sect14/Sect14\\_1c.html](http://www.fas.org/irp/imint/docs/rst/Sect14/Sect14_1c.html)
8. **Training Aids:** Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for classroom / training area.
9. **Learning Aids:** Nil.

10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, Aviation Subjects—Combined Assessment PC.
11. **Remarks:** Cadets who are qualified Advanced Aviation may assist with this instruction.



**EO M436.02**

1. **Performance:** Describe Air Masses and Fronts
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 describe air masses and fronts, to include:
  - a. weather in an air mass,
  - b. types of fronts, and
  - c. frontal weather.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Explain weather in an air mass.	Interactive Lecture	10 min	C3-116 (p. 140)
TP2	Define and explain types of fronts.	Interactive Lecture	15 min	C3-116 (p. 140) C3-334
TP3	Conduct an in-class activity to describe types of fronts and associated weather, to include: <ol style="list-style-type: none"> <li>a. warm front,</li> <li>b. cold front,</li> <li>c. stationary front,</li> <li>d. occluded fronts, and</li> <li>e. upper fronts.</li> </ol>	In-Class Activity	55 min	A3-044 (pp. 7-12 to 7-15) C3-116 (pp. 142–145)

5. **Time:**
  - a. Introduction / Conclusion: 10 min
  - b. Interactive Lecture: 25 min
  - c. In-Class Activity: 55 min
  - d. Total: 90 min

6. **Substantiation:**

- a. An interactive lecture was chosen for TPs 1 and 2 to orient the cadets to air masses and fronts and generate interest.
- b. An in-class activity was chosen for TP 3 as it is an interactive way to present types of fronts and associated weather.

7. **References:**

- a. A3-044 CFACM 2-700 Air Command. (2001). *Air Command weather manual*. Ottawa, ON: Department of National Defence.
- b. 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.
- c. C3-334 "Remote Sensing Tutorial", 2005, *Federation of American Scientists*, by N. Short, 2005. Retrieved February 26, 2009 from [http://www.fas.org/irp/imint/docs/rst/Sect14/Sect14\\_1c.html](http://www.fas.org/irp/imint/docs/rst/Sect14/Sect14_1c.html)

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for classroom / training area,
- b. Two thermos / cooler / bottle,
- c. Two baby food jars,
- d. Red and blue food colouring,
- e. Index card / plastic coated paper, and
- f. Fronts information sheets.

9. **Learning Aids:**

- a. Pen / pencil,
- b. Coloured pencils / markers, and
- c. Fronts worksheets.

10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, Aviation Subjects—Combined Assessment PC.

11. **Remarks:**

- a. It is recommended that the three periods required for this EO be scheduled consecutively.
- b. Cadets who are qualified Advanced Aviation may assist with this instruction.

**EO C436.01**

1. **Performance:** Explain Fog
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 explain:
  - a. formation of fog, and
  - b. types of fog.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Have the cadets perform an experiment to illustrate the formation of fog.	In-Class Activity	10 min	C3-116 (p. 147) C3-200
TP2	Conduct an in-class activity to explain types of fog.	In-Class Activity	15 min	C3-116 (p. 147)

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 present the formation and types of fog.
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. C3-200 Weather Wiz Kids. (2008). *Make fog*. Retrieved September 26, 2008, from <http://www.weatherwizkids.com/fog.htm>
8. **Training Aids:**
  - a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for classroom / training area,
  - b. Glass jar,
  - c. Strainer,

- d. Kettle,
- e. Water, and
- f. Ice cubes.

9. **Learning Aids:**

- a. Glass jar,
- b. Strainer,
- c. Oven mitts,
- d. Water,
- e. Rubbing alcohol,
- f. Ice cubes,
- g. Flip chart paper,
- h. Flip chart markers, and
- i. From the Ground Up: *Millennium Edition*.

10. **Test Details:** Nil.

11. **Remarks:** Cadets who are qualified Advanced Aviation may assist with this instruction.

**EO C436.02**

1. **Performance:** Describe Severe Weather Conditions
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 describe severe weather conditions, to include:
  - a. thunderstorms,
  - b. icing, and
  - c. turbulence.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Describe thunderstorms, to include: <ol style="list-style-type: none"> <li>a. formation,</li> <li>b. dangers, and</li> <li>c. avoidance.</li> </ol>	Interactive Lecture	10 min	C3-116 (pp. 148–151)
TP2	Describe icing, to include: <ol style="list-style-type: none"> <li>a. types of icing, and</li> <li>b. protection from icing.</li> </ol>	Interactive Lecture	5 min	C3-116 (pp. 153–155)
TP3	Describe types of turbulence, to include: <ol style="list-style-type: none"> <li>a. mechanical turbulence,</li> <li>b. thermal turbulence,</li> <li>c. frontal turbulence, and</li> <li>d. wind shear.</li> </ol>	Interactive Lecture	10 min	C3-116 (p. 156, pp. 288–289)

5. **Time:**
  - a. Introduction / Conclusion: 5 min
  - b. Interactive Lecture: 25 min
  - c. Total: 30 min
6. **Substantiation:** An interactive lecture was chosen for this lesson to introduce the cadets to severe weather conditions and to generate interest.

7. **References:** 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.
8. **Training Aids:** Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for classroom / training area.
9. **Learning Aids:** Nil.
10. **Test Details:** Nil.
11. **Remarks:** Cadets who are qualified Advanced Aviation may assist with this instruction.

**EO C436.03**

1. **Performance:** Analyze Weather Information
2. **Conditions:**
  - a. Given:
    - (1) Aviation reports and forecasts,
    - (2) Supervision, and
    - (3) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Classroom or training area large enough to accommodate the entire group.
3. **Standard:** The cadet shall analyze weather information by reading:
  - a. aviation routine weather reports (METARs),
  - b. aerodrome forecasts (TAFs),
  - c. upper winds and temperature forecasts (FDs), and
  - d. graphic area forecasts (GFAs).
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Describe a METAR, to include: <ol style="list-style-type: none"> <li>a. definition,</li> <li>b. frequency of reports,</li> <li>c. special weather reports (SPECI), and</li> <li>d. where METARs are available.</li> </ol>	Interactive Lecture	5 min	C2-044 (p. 144) C3-116 (p. 160)
TP2	Familiarize the cadets with METAR terminology, to include: <ol style="list-style-type: none"> <li>a. report type,</li> <li>b. location indicator,</li> <li>c. date and time of observation,</li> <li>d. report modifier,</li> <li>e. wind,</li> <li>f. prevailing visibility,</li> <li>g. runway visual range,</li> <li>h. present weather,</li> <li>i. sky conditions,</li> <li>j. temperature and dewpoint,</li> <li>k. altimeter setting,</li> </ol>	Interactive Lecture	15 min	C2-044 (pp. 143–147) C3-116 (pp. 160–163)

TP	Description	Method	Time	Refs
	<ul style="list-style-type: none"> <li>l. recent weather,</li> <li>m. wind shear, and</li> <li>n. remarks.</li> </ul>			
TP3	Describe a TAF, to include: <ul style="list-style-type: none"> <li>a. definition,</li> <li>b. issue and validity, and</li> <li>c. where TAFs are available.</li> </ul>	Interactive Lecture	5 min	C2-044 (p. 135) C3-116 (p. 167)
TP4	Familiarize the cadets with TAF terminology, to include: <ul style="list-style-type: none"> <li>a. report type,</li> <li>b. location indicator,</li> <li>c. date and time of origin,</li> <li>d. period of validity,</li> <li>e. wind,</li> <li>f. low-level wind shear,</li> <li>g. prevailing visibility,</li> <li>h. significant weather,</li> <li>i. sky condition,</li> <li>j. change groups, and</li> <li>k. remarks.</li> </ul>	Interactive Lecture	15 min	C2-044 (pp. 136–139) C3-116 (pp. 167–169)
TP5	Describe an FD, to include: <ul style="list-style-type: none"> <li>a. definition,</li> <li>b. decoding, and</li> <li>c. where FDs are available.</li> </ul>	Interactive Lecture	5 min	C2-044 (p. 140) C3-116 (p. 169)
TP6	Describe a GFA, to include: <ul style="list-style-type: none"> <li>a. definition,</li> <li>b. issue and validity,</li> <li>c. coverage area,</li> <li>d. units of measure,</li> <li>e. abbreviations and symbols, and</li> <li>f. where GFAs are available.</li> </ul>	Interactive Lecture	10 min	C2-044 (p. 120) C3-116 (p. 166)
TP7	Familiarize the cadets with GFA Clouds and Weather Chart layout, to include: <ul style="list-style-type: none"> <li>a. title box,</li> <li>b. legend box,</li> <li>c. comments box, and</li> </ul>	Interactive Lecture	15 min	C2-044 (pp. 120–124) C3-116 (pp. 166–167)



TP	Description	Method	Time	Refs
	d. weather information section, to include: (1) synoptic features, (2) clouds, (3) surface-based layers, (4) visibility, (5) weather and obstructions to vision, (6) isobars, and (7) surface winds.			
TP8	Conduct an activity to have the cadets read METARs, TAFs, FDs and GFA Clouds and Weather Charts.	In-Class Activity	15 min	

5. **Time:**

- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 5 min  |
| b. | Interactive Lecture:       | 70 min |
| c. | In-Class Activity          | 15 min |
| d. | Total:                     | 90 min |

6. **Substantiation:**

- An interactive lecture was chosen for TPs 1–7 to introduce weather reports and forecasts, to give the cadets the basic material they need to decode and analyze the information and to generate interest.
- An in-class activity was chosen for TP 8 as it is an interactive way for the cadets to practice analyzing weather information under supervision.

7. **References:**

- C2-044 Transport Canada. (2008). *Aeronautical information manual*. Retrieved September 29, 2008, from <http://www.tc.gc.ca/publications/EN/TP14371/PDF/HR/TP14371E.PDF>
- 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.

8. **Training Aids:**

- Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / presentation area, and
- Recent local METARs, TAFs, FDs and GFAs.

9. **Learning Aids:**

- Handout of sample METARs and SPECIs,
- Handout of sample TAFs,
- Handout of sample FDs,

- d. Handout of sample GFAs,
- e. Handout of the World Meteorological Organization (WMO) code chart, and
- f. Handout of the aviation forecast abbreviations chart.

10. **Test Details:** Nil.

11. **Remarks:**

- a. Recent METARs, TAFs, FDs and GFAs can be found at <http://www.flightplanning.navcanada.ca>. Click on the METAR / TAF, UPR WNDS (FDs), or Graphical FA icon and choose the desired region.
- b. It is recommended that the three periods required for this EO be scheduled consecutively.
- c. Cadets who are qualified Advanced Aviation may assist with this instruction.

**PO 437**

1. **Performance:** Explain Aspects of Air Navigation
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 will explain aspects of air navigation by:
  - a. defining air navigation terms; and
  - b. describing the magnetic compass.
4. **Remarks:** Nil.
5. **Complementary Material:**
  - a. Complementary material associated with PO 437 is designed to enhance the cadet's knowledge of air navigation, specifically:
    - (1) EO C437.01 (Solve Navigation Problems With a Manual Flight Computer), and
    - (2) EO C437.02 (Use a Visual Flight Rules [VFR] Navigation Chart [VNC]).
  - b. Complementary material from PO 337 that was not conducted in the previous year may be selected as complementary training in Proficiency Level Four.

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**EO M437.01**

1. **Performance:** Define Air Navigation Terms
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 define:
  - a. latitude and longitude,
  - b. great circles,
  - c. rhumb lines, and
  - d. headings and bearings.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Define: <ol style="list-style-type: none"> <li>a. meridians of longitude,</li> <li>b. parallels of latitude,</li> <li>c. geographical co-ordinates, and</li> <li>d. the relationship between time and longitude.</li> </ol>	Interactive Lecture	25 min	C3-116 (pp. 175–176)
TP2	Define great circles and rhumb lines.	Interactive Lecture	10 min	C3-116 (p. 177)
TP3	Define headings and bearings.	Interactive Lecture	5 min	C3-116 (p. 177)
TP4	Have the cadets take headings and bearings.	In-Class Activity	10 min	

5. **Time:**
  - a. Introduction / Conclusion: 10 min
  - b. Interactive Lecture: 40 min
  - c. In-Class Activity: 10 min
  - d. Total: 60 min

6. **Substantiation:**

- a. An interactive lecture was chosen for TPs 1–3 to clarify, emphasize, and summarize navigation terms.
- b. An in-class activity was chosen for TP 4 as it is an interactive way to reinforce bearings and headings, and confirm the cadets' comprehension of navigation terms.

7. **References:** 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.

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area,
- b. Large globe with latitude and longitude markings, and
- c. Douglas protractor.

9. **Learning Aids:**

- a. Local VFR Navigation Chart (VNC),
- b. Douglas protractor,
- c. Pen / pencil, and
- d. Headings and Bearings worksheet.

10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, Aviation Subjects—Combined Assessment PC.

11. **Remarks:** Cadets who are qualified Advanced Aviation may assist with this instruction.

**EO M437.02**

1. **Performance:** Describe the Magnetic Compass
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 describe the magnetic compass, to include:
  - a. the Earth's magnetism,
  - b. the main parts of the compass,
  - c. variation, and
  - d. compass errors.

4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Describe the Earth's magnetism.	Interactive Lecture	5 min	C3-116 (pp. 177–178)
TP2	Describe the main parts of the magnetic compass.	Interactive Lecture	5 min	C3-116 (p. 179)
TP3	Describe variation.	Interactive Lecture	5 min	C3-116 (pp. 178–179)
TP4	Describe compass errors.	Interactive Lecture	10 min	C3-116 (pp. 179–182)

5. **Time:**
  - a. Introduction / Conclusion: 5 min
  - b. Interactive Lecture: 25 min
  - c. Total: 30 min
6. **Substantiation:** An interactive lecture was chosen for this lesson to clarify, emphasize, and summarize the magnetic compass.
7. **References:** 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.

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area, and
- b. Examples of magnetic compasses.

9. **Learning Aids:**

- a. Pen / pencil, and
- b. Magnetic Headings worksheet.

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

11. **Remarks:** Cadets who are qualified Advanced Aviation may assist with this instruction.



**EO C437.01**

1. **Performance:** Solve Navigation Problems With a Manual Flight Computer
2. **Conditions:**
  - a. Given:
    - (1) Manual flight computer,
    - (2) Supervision, and
    - (3) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Classroom or training area large enough to accommodate the entire group.
3. **Standard:** The cadet shall solve navigation problems with a manual flight computer by:
  - a. converting units of measure; and
  - b. calculating:
    - (1) speed,
    - (2) distance, and
    - (3) time.

4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Demonstrate how to use a manual flight computer to convert units of measure and have the cadets practice converting units of measure.	Demonstration and Performance	25 min	C3-116 (pp. 199–200)
TP2	Demonstrate how to use a manual flight computer to calculate speed, distance, and time and have the cadets practice calculating speed, distance, and time.	Demonstration and Performance	25 min	C3-116 (pp. 199–200)

5. **Time:**
  - a. Introduction / Conclusion: 10 min
  - b. Demonstration and Performance: 50 min
  - c. Total: 60 min
6. **Substantiation:** A demonstration and performance was chosen for this lesson as it allows the instructor to explain and demonstrate solving navigation problems with a manual flight computer while providing an opportunity for the cadets to practice this skill under supervision.
7. **References:** 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.

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area, and
- b. Manual flight computer.

9. **Learning Aids:**

- a. Pen / pencil,
- b. Manual flight computer, and
- c. Navigation problems worksheet.

10. **Test Details:** Nil.

11. **Remarks:**

- a. Assistant instructors may be required for this lesson.
- b. Cadets who are qualified Advanced Aviation may assist with this instruction.

**EO C437.02**

1. **Performance:** Use a Visual Flight Rules (VFR) Navigation Chart (VNC)
2. **Conditions:**
  - a. Given:
    - (1) VNC,
    - (2) International Civil Aviation Organization (ICAO) ruler,
    - (3) Douglas protractor,
    - (4) Supervision, and
    - (5) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Classroom or training area large enough to accommodate the entire group.
3. **Standard:** The cadet shall use a VNC by:
  - a. explaining types of projections;
  - b. describing types of aeronautical charts;
  - c. locating landmarks using latitude and longitude;
  - d. plotting tracks between landmarks;
  - e. measuring distances; and
  - f. determining headings.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Explain types of projections.	Interactive Lecture	5 min	C3-116 (pp. 184–186)
TP2	Describe types of aeronautical charts.	Interactive Lecture	5 min	C3-116 (pp. 186–188)
TP3	Explain, demonstrate and have the cadets practice locating landmarks on a VNC using latitude and longitude.	Demonstration and Performance	15 min	
TP4	Explain, demonstrate and have the cadets practice plotting tracks between landmarks on a VNC.	Demonstration and Performance	5 min	
TP5	Explain, demonstrate and have the cadets practice measuring distances on a VNC.	Demonstration and Performance	10 min	

TP	Description	Method	Time	Refs
TP6	Explain, demonstrate and have the cadets practice determining headings on a VNC.	Demonstration and Performance	10 min	

5. **Time:**

- |    |                                |        |
|----|--------------------------------|--------|
| a. | Introduction / Conclusion:     | 10 min |
| b. | Interactive Lecture:           | 10 min |
| c. | Demonstration and Performance: | 40 min |
| d. | Total:                         | 60 min |

6. **Substantiation:**

- An interactive lecture was chosen for TPs 1 and 2 to clarify, emphasize, and summarize types of projections and aeronautical charts.
- A demonstration and performance was chosen for TPs 3–6 as it allows the instructor to explain and demonstrate using a VNC while providing an opportunity for the cadets to practice using a VNC under supervision.

7. **References:** 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.

8. **Training Aids:**

- Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area,
- Large globe with latitude and longitude markings,
- Sheet of flip chart paper,
- VNC,
- World Aeronautical Chart,
- VFR Terminal Area Chart,
- Enroute Chart,
- ICAO ruler, and
- Douglas protractor.

9. **Learning Aids:**

- Pencil,
- VNC,
- ICAO ruler,
- Ruler,

- e. Paper, and
- f. Douglas protractor.

10. **Test Details:** Nil.

11. **Remarks:**

- a. Assistant instructors may be required for this lesson.
- b. Cadets who are qualified Advanced Aviation may assist with this instruction.

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**PO 440**

1. **Performance:** Discuss Aerospace Structures
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 will discuss aerospace structures, to include:
  - a. aerospace materials, and
  - b. Canadian satellites.
4. **Remarks:** Nil.
5. **Complementary Material:**
  - a. Complementary material associated with PO 440 is designed to enhance the cadet's knowledge of aerospace structures, specifically:
    - (1) EO C440.01 (Describe Model Rocketry),
    - (2) EO C440.02 (Launch a Small Model Rocket),
    - (3) EO C440.03 (Discuss Characteristics of the Planets in the Solar System),
    - (4) EO C440.04 (Apply the Material Science of Trusses),
    - (5) EO C440.05 (Describe Robotics),
    - (6) EO C440.06 (Use Star Charts),
    - (7) EO C440.07 (Operate a Telescope),
    - (8) EO C440.08 (Watch *BLAST! [Balloon-Borne Large Aperture Sub-Millimetre Telescope]*).
    - (9) EO C440.09 (Describe the Relationship Between Gravity and Space-time),
    - (10) EO C440.10 (Discuss Kinetic and Potential Energy), and
    - (11) EO C440.11 (Watch *Einstein's Big Idea*).
  - b. EO C440.01 (Describe Model Rocketry) must be conducted before EO C440.02 (Launch a Small Rocket).
  - c. Complementary material from PO 340 that was not conducted in the previous year may be selected as complementary training in Proficiency Level Four.

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**EO M440.01**

1. **Performance:** Identify Aerospace Materials
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 identify various aerospace materials, to include:
  - a. aluminum,
  - b. magnesium,
  - c. titanium,
  - d. stainless steel,
  - e. fibreglass,
  - f. aramid,
  - g. carbon / graphite, and
  - h. ceramic.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Discuss: <ol style="list-style-type: none"> <li>a. metals used in aerospace construction, to include:               <ol style="list-style-type: none"> <li>(1) aluminum,</li> <li>(2) magnesium,</li> <li>(3) titanium, and</li> <li>(4) stainless steel;</li> </ol> </li> <li>b. material tests, and</li> <li>c. orbit environment.</li> </ol>	Interactive Lecture	15 min	C3-136 (pp. 2-1 to 2-15) C3-294
TP2	Discuss composite materials used in aerospace construction, to include: <ol style="list-style-type: none"> <li>a. fibreglass,</li> <li>b. aramid,</li> <li>c. carbon / graphite, and</li> <li>d. ceramic.</li> </ol>	Interactive Lecture	10 min	C3-136 (pp. 3-22 to 3-27)

5. **Time:**

- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 5 min  |
| b. | Interactive Lecture:       | 25 min |
| c. | Total:                     | 30 min |

6. **Substantiation:** An interactive lecture was chosen for this lesson to introduce the cadets to aerospace materials and to generate interest in the subject.

7. **References:**

- a. C3-136 ISBN 0-88487-207-6 Sanderson Training Systems. (2001). *A&P technician airframe textbook*. Englewood, CO: Jeppesen Sanderson Inc.
- b. C3-294 Silverman, E. M. (1995). *Space environmental effects on spacecraft: LEO materials selection guide*. Hampton, VA: NASA Langley Research Center. Retrieved November 27, 2008, from <http://see.msfc.nasa.gov/mp/NASA-95-cr4661pt1.pdf>

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area.
- b. Samples of materials, to include:
  - (1) metals, to include:
    - (a) aluminum,
    - (b) magnesium steel,
    - (c) titanium steel, and
    - (d) stainless steel;
  - (2) composite cloth, to include:
    - (a) fibreglass,
    - (b) aramid,
    - (c) carbon / graphite, and
    - (d) ceramic.

9. **Learning Aids:** Nil.

10. **Test Details:** Nil.

11. **Remarks:** Cadets who are qualified Advanced Aerospace may assist with this instruction.

**EO M440.02**

1. **Performance:** Describe Canadian Satellites
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 describe Canadian satellites, to include:
  - a. Alouette,
  - b. Microvariability and Oscillation of Stars (MOST), and
  - c. Radarsat.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Identify aspects of the Alouette program, to include: <ol style="list-style-type: none"> <li>a. history,</li> <li>b. purpose, and</li> <li>c. accomplishments.</li> </ol>	Interactive Lecture	5 min	C3-253
TP2	Identify aspects of the MOST mission, to include: <ol style="list-style-type: none"> <li>a. history,</li> <li>b. purpose, and</li> <li>c. accomplishments.</li> </ol>	Interactive Lecture	10 min	C3-254
TP3	Identify aspects of the RADARSAT program, to include: <ol style="list-style-type: none"> <li>a. history,</li> <li>b. purpose, and</li> <li>c. accomplishments.</li> </ol>	Interactive Lecture	10 min	C3-255

5. **Time:**
  - a. Introduction / Conclusion: 5 min
  - b. Interactive Lecture: 25 min
  - c. Total: 30 min
6. **Substantiation:** An interactive lecture was chosen for this lesson to orient the cadets to Canadian satellites and to generate interest in the subject.

7. **References:**

- a. C3-253 Canadian Space Agency. (2008). *Alouette I and II*. Retrieved September 29, 2008, from <http://www.space.gc.ca/asc/eng/satellites/alouette.asp>
- b. C3-254 University of British Columbia. (2008). *MOST: Canada's first space telescope*. Retrieved September 29, 2008, from <http://www.astro.ubc.ca/MOST/overview.html#glance>
- c. C3-255 Natural Resources Canada. (2008). *Canada centre for remote sensing: RADARSAT*. Retrieved September 29, 2008, from [http://www.ccrs.nrcan.gc.ca/radar/spaceborne/radarsat1/index\\_e.php](http://www.ccrs.nrcan.gc.ca/radar/spaceborne/radarsat1/index_e.php)

8. **Training Aids:** Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area.

9. **Learning Aids:** Nil.

10. **Test Details:** Nil.

11. **Remarks:** Cadets who are qualified Advanced Aerospace may assist with this instruction.

**EO C440.01**

1. **Performance:** Describe Model Rocketry
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 describe model rocketry, to include:
  - a. the parts of a model rocket engine,
  - b. the parts of a model rocket,
  - c. the flight profile of a model rocket, and
  - d. model rocketry safety rules.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Describe the parts of a model rocket engine, to include: <ol style="list-style-type: none"> <li>a. engine case,</li> <li>b. clay nozzle,</li> <li>c. black powder propellant,</li> <li>d. delay composition,</li> <li>e. ejection charge, and</li> <li>f. igniter.</li> </ol>	Interactive Lecture	15 min	C3-162 C3-259
TP2	Describe the parts of a model rocket, to include: <ol style="list-style-type: none"> <li>a. nose cone,</li> <li>b. body tube,</li> <li>c. fins,</li> <li>d. launch lug,</li> <li>e. engine stop,</li> <li>f. engine restraint,</li> <li>g. shock cord, and</li> <li>h. parachute.</li> </ol>	Interactive Lecture	10 min	C3-162 C3-259

TP	Description	Method	Time	Refs
TP3	Describe the flight profile of a model rocket, to include: a. ignition, b. power, c. coast / delay, d. ejection, e. descent, and f. landing.	Interactive Lecture	10 min	C3-162 C3-163 C3-259
TP4	Explain model rocketry safety rules.	Interactive Lecture	15 min	C3-162 C3-259

5. **Time:**

- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 10 min |
| b. | Interactive Lecture:       | 50 min |
| c. | Total:                     | 60 min |

6. **Substantiation:** An interactive lecture was chosen for this lesson to present basic information on model rocketry and summarize the teaching points.7. **References:**

- a. C3-162 Beach, T. (1993). *Model rocketry technical manual*. Retrieved October 10, 2007, from <http://www.estesrockets.com/assets/downloads/roocketrytechniques.pdf>
- b. C3-163 Cannon, R. L. (1999). *A learning guide for model rocket launch systems*. Retrieved October 10, 2007, from <http://www.estesrockets.com/assets/downloads/launchsystemguide.pdf>
- c. C3-259 ISBN 978-0471472421 Stine, G. H. (2004). *Handbook of model rocketry*. Toronto, ON: John Wiley & Sons.

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area,
- b. Model rocket cutaway,
- c. Model rocket kit,
- d. Model rocket engine, and
- e. Digital scale.

9. **Learning Aids:** Nil.10. **Test Details:** Nil.11. **Remarks:** Cadets who are qualified Advanced Aerospace may assist with this instruction.

**EO C440.02**

1. **Performance:** Launch a Small Model Rocket
2. **Conditions:**
  - a. Given:
    - (1) Cement for plastic models,
    - (2) No. 11 hobby knife,
    - (3) Pencil,
    - (4) Scissors,
    - (5) Small model rocket kit,
    - (6) Supervision, and
    - (7) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental:
    - (1) Classroom or training area large enough to accommodate the entire group, and
    - (2) Outdoor training area IAW Canadian Association of Rocketry (CAR) standards.
3. **Standard:** The cadet shall:
  - a. construct a small model rocket;
  - b. assist in the set-up of the rocket launch site; and
  - c. launch a small model rocket.
4. **Teaching Points:** Have the cadet, as a member of a pair:
  - a. assemble a small model rocket;
  - b. assist in the set-up of the rocket launch site; and
  - c. launch a small model rocket.
5. **Time:**

a. Introduction / Conclusion:	10 min
b. Practical Activity:	80 min
c. Total:	90 min
6. **Substantiation:** A practical activity was chosen for this lesson as it is an interactive way to introduce the cadets to constructing and launching model rockets in a safe, controlled environment.
7. **References:**
  - a. C3-162 Beach, T. (1993). *Model rocketry technical manual*. Retrieved October 10, 2007, from <http://www.estesrockets.com/assets/downloads/roocketrytechniques.pdf>

- b. C3-163 Cannon, R. L. (1999). *A learning guide for model rocket launch systems*. Retrieved October 10, 2007, from <http://www.estesrockets.com/assets/downloads/launchsystemguide.pdf>
- c. C3-259 ISBN 978-0-471-47242-1 Stine, G. H. (2004). *Handbook of model rocketry*. Toronto, ON: John Wiley & Sons.

8. **Training Aids:**

- a. Launch tower for a model rocket,
- b. Launch controller for a model rocket,
- c. 80 m of safety tape,
- d. 18 modular tent pegs or a suitable substitute,
- e. Safety glasses,
- f. Voltmeter,
- g. Pliers,
- h. Screwdriver, and
- i. Electrical tape.

9. **Learning Aids:**

- a. Safety glasses,
- b. Cement for plastic models,
- c. No. 11 hobby knife,
- d. Pencil, Scissors, and
- e. Small model rocket kit.

10. **Test Details:** Nil.

11. **Remarks:**

- a. EO C440.01 (Describe Model Rocketry) must also be selected and delivered prior to this lesson.
- b. Cadets who are qualified Advanced Aerospace may assist with this instruction.



**EO C440.03**

1. **Performance:** Discuss Characteristics of the Planets in the Solar System
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 the characteristics of the planets in the solar system, to include:
  - a. mean distance from the sun,
  - b. size,
  - c. mass,
  - d. rotation,
  - e. inclination, and
  - f. orbit characteristics.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Discuss the planet Mercury, to include: <ol style="list-style-type: none"> <li>a. mean distance from the sun,</li> <li>b. size,</li> <li>c. mass,</li> <li>d. rotation,</li> <li>e. inclination, and</li> <li>f. orbit characteristics.</li> </ol>	Interactive Lecture	5 min	C3-170 C3-288 C3-289
TP2	Discuss the planet Venus, to include: <ol style="list-style-type: none"> <li>a. mean distance from the sun,</li> <li>b. size,</li> <li>c. mass,</li> <li>d. rotation,</li> <li>e. inclination, and</li> <li>f. orbit characteristics.</li> </ol>	Interactive Lecture	5 min	C3-170 C3-288 C3-289

TP	Description	Method	Time	Refs
TP3	Discuss the planet Earth, to include: a. mean distance from the sun, b. size, c. mass, d. rotation, e. inclination, and f. orbit characteristics.	Interactive Lecture	10 min	C3-170 C3-288 C3-289
TP4	Discuss the planet Mars, to include: a. mean distance from the sun, b. size, c. mass, d. rotation, e. inclination, and f. orbit characteristics.	Interactive Lecture	5 min	C3-170 C3-288 C3-289
TP5	Discuss the planet Jupiter, to include: a. mean distance from the sun, b. size, c. mass, d. rotation, e. inclination, and f. orbit characteristics.	Interactive Lecture	10 min	C3-170 C3-288 C3-289
TP6	Discuss the planet Saturn, to include: a. mean distance from the sun, b. size, c. mass, d. rotation, e. inclination, and f. orbit characteristics.	Interactive Lecture	5 min	C3-170 C3-288 C3-289
TP7	Discuss the planet Uranus, to include: a. mean distance from the sun, b. size, c. mass, d. rotation, e. inclination, and f. orbit characteristics.	Interactive Lecture	5 min	C3-170 C3-288 C3-289

TP	Description	Method	Time	Refs
TP8	Discuss the planet Neptune, to include: a. mean distance from the sun, b. size, c. mass, d. rotation, e. inclination, and f. orbit characteristics.	Interactive Lecture	5 min	C3-170 C3-288 C3-289

5. **Time:**

- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 10 min |
| b. | Interactive Lecture:       | 50 min |
| c. | Total:                     | 60 min |

6. **Substantiation:** An interactive lecture was chosen for this lesson to introduce the cadets to the characteristics of the planets in the solar system and to generate interest in the subject.

7. **References:**

- a. C3-170 Ottewell, G. The National Optical Observatory. (1998). *Thousand-yard model: Or, Earth as a peppercorn*. Retrieved October 16, 2007, from <http://www.noao.edu/education/peppercorn/pcmain.html>
- b. C3-288 Williams, D. NASA. (2008). *Planetary fact sheet—metric*. Retrieved October 14, 2008, from <http://nssdc.gsfc.nasa.gov/planetary/factsheet/index.html>
- c. C3-289 Williams, D. NASA. (2008). *Planetary fact sheet—ratio to earth values*. Retrieved October 14, 2008, from [http://nssdc.gsfc.nasa.gov/planetary/factsheet/planet\\_table\\_ratio.html](http://nssdc.gsfc.nasa.gov/planetary/factsheet/planet_table_ratio.html)

8. **Training Aids:** Nil.

9. **Learning Aids:** Planet specification sheet.

10. **Test Details:** Nil.

11. **Remarks:**

- a. Planetary data is provided in detail at <http://solarsystem.nasa.gov/planets/index.cfm>
- b. Cadets who are qualified Advanced Aerospace may assist with this instruction.

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**EO C440.04**

1. **Performance:** Apply the Material Science of Trusses
2. **Conditions:**
  - a. Given:
    - (1) Legal-size graph paper,
    - (2) Mechanical pencils,
    - (3) Eraser,
    - (4) 30-cm ruler,
    - (5) Plastic protractor,
    - (6) Marbles,
    - (7) Suspended container mount,
    - (8) Hot glue gun,
    - (9) Hot glue sticks,
    - (10) Hobby knife,
    - (11) Uncooked spaghetti,
    - (12) Supervision, and
    - (13) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Classroom or training area large enough to accommodate the entire group.
3. **Standard:** The cadet, in pairs, shall apply the material science of trusses by:
  - a. designing a truss;
  - b. constructing a truss; and
  - c. testing a truss.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Explain the material science of trusses.	Interactive Lecture	15 min	C3-331
TP2	Have the cadets, in pairs, design a truss.	Practical Activity	15 min	
TP3	Have the cadets, in pairs, construct and test a truss.	Practical Activity	50 min	

5. **Time:**

- |                               |        |
|-------------------------------|--------|
| a. Introduction / Conclusion: | 10 min |
| b. Interactive Lecture:       | 15 min |
| c. Practical Activity:        | 65 min |
| d. Total:                     | 90 min |

6. **Substantiation:**

- a. An interactive lecture was chosen for TP 1 to generate interest in the material science of trusses and summarize the teaching point.
- b. A practical activity was chosen for TPs 2 and 3 as it is an interactive way to allow the cadets to design and test a truss in a safe and controlled environment.

7. **References:** C3-331 McMaster University YES I Can! Science Team. (2009). *How forces act on structures*. Retrieved February 19, 2009, from <http://resources.yesican-science.ca/sts115/aboutforces.html>

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area.
- b. Marbles, and
- c. Suspended container.

9. **Learning Aids:**

- a. Legal-size graph paper,
- b. Mechanical pencils,
- c. Eraser,
- d. 30-cm ruler,
- e. Plastic protractor,
- f. Marbles,
- g. Suspended container mount,
- h. Hot glue gun,
- i. Hot glue sticks,
- j. Hobby knife, and
- k. Uncooked spaghetti.

10. **Test Details:** Nil.

11. **Remarks:**

- a. This lesson should be taught in three consecutive periods.
- b. Cadets who are qualified Advanced Aerospace may assist with this instruction.

**EO C440.05**

1. **Performance:** Describe Robotics
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 describe robotics, to include:
  - a. types of robots, and
  - b. robotic applications.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Describe types of robots, to include: <ol style="list-style-type: none"> <li>a. autonomous systems, and</li> <li>b. remote-controlled systems.</li> </ol>	Interactive Lecture	10 min	C3-292
TP2	Describe robotic applications, to include: <ol style="list-style-type: none"> <li>a. industrial fabrication, to include:               <ol style="list-style-type: none"> <li>(1) machining,</li> <li>(2) cutting,</li> <li>(3) assembling, and</li> <li>(4) welding,</li> </ol> </li> <li>b. exploration,</li> <li>c. space,</li> <li>d. emergency services, and</li> <li>e. military.</li> </ol>	Interactive Lecture	15 min	C3-292

5. **Time:**
  - a. Introduction: 5 min
  - b. Interactive Lecture: 25 min
  - c. Total: 30 min
6. **Substantiation:** An interactive lecture was chosen for this lesson to give the cadets an overview of robotics and to generate interest in the subject.
7. **References:** C3-292 NASA. (2003). *Rover ranch: K-12 experiments in robotic software*. Retrieved November 20, 2008, from <http://prime.jsc.nasa.gov/ROV/>

8. **Training Aids:** Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area.
9. **Learning Aids:** Nil.
10. **Test Details:** Nil.
11. **Remarks:** Cadets who are qualified Advanced Aerospace may assist with this instruction.



**EO C440.06**

1. **Performance:** Use Star Charts
2. **Conditions:**
  - a. Given:
    - (1) Planisphere,
    - (2) Red-filtered flashlight,
    - (3) Star charts,
    - (4) Supervision, and
    - (5) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental:
    - (1) Classroom or training area large enough to accommodate the entire group, and
    - (2) An open outdoor area with clear sky, at night, away from light pollution.
3. **Standard:** The cadet shall use star charts to identify elements of the night sky.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Explain how the celestial sphere is divided, to include: <ol style="list-style-type: none"> <li>a. how earth and sky are assumed to be concentric,</li> <li>b. celestial poles, and</li> <li>c. celestial equator.</li> </ol>	Interactive Lecture	5 min	C3-176 (p. 168) C3-179 (pp. 28–29)
TP2	Explain how the sphere of the sky is represented on star charts, to include: <ol style="list-style-type: none"> <li>a. declination,</li> <li>b. right ascension, and</li> <li>c. the plane of the ecliptic.</li> </ol>	Interactive Lecture	5 min	C3-176 (pp. 212–217) C3-179 (pp. 99–119)
TP3	Explain how to interpret a star chart, to include: <ol style="list-style-type: none"> <li>a. date,</li> <li>b. time,</li> <li>c. latitude,</li> <li>d. orientation, and</li> <li>e. planets.</li> </ol>	Interactive Lecture	5 min	C3-176 (pp. 212–217) C3-179 (pp. 99–119)

TP	Description	Method	Time	Refs
TP4	<p>Explain, demonstrate and have the cadets identify elements of the night sky by exploring aspects of a planisphere, to include:</p> <ul style="list-style-type: none"> <li>a. planisphere design,</li> <li>b. the lack of planetary data on a planisphere,</li> <li>c. date,</li> <li>d. time,</li> <li>e. midnight time mark,</li> <li>f. latitude,</li> <li>g. orientation,</li> <li>h. horizon,</li> <li>i. constellations, and</li> <li>j. stars.</li> </ul>	Demonstration and Performance	40 min	C3-180 (p. 1) C3-221

5. **Time:**

- |    |                                |        |
|----|--------------------------------|--------|
| a. | Introduction / Conclusion:     | 5 min  |
| b. | Interactive Lecture:           | 15 min |
| c. | Demonstration and Performance: | 40 min |
| d. | Total:                         | 60 min |

6. **Substantiation:**

- a. An interactive lecture was chosen for TPs 1–3 to introduce the cadets to star charts and give an overview of the subject.
- b. A demonstration and performance was chosen for TP 4 as it allows the instructor to explain and demonstrate planisphere use while providing an opportunity for the cadets to practice the skill under supervision.

7. **References:**

- a. C3-176 ISBN 1-55407-071-6 Moore, P. (2005). *Atlas of the universe*. Richmond Hill, ON: Firefly Books.
- b. C3-179 ISBN 1-55209-302-6 Dickenson, T. (2001). *Night watch: A practical guide to viewing the universe*. Willowdale, ON: Firefly Books.
- c. C3-180 ISBN 1-55297-853-2 Scagell, R. (2004). *Firefly planisphere: Latitude 42 deg N*. Willowdale, ON: Firefly Books.
- d. C3-221 National Research Council of Canada. (2007). *Explore the night sky*. Retrieved December 3, 2007, from <http://www.nrc-cnrc.gc.ca/eng/education/astronomy/constellations/html.html>

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area,
- b. Planisphere star chart,
- c. Red-filtered flashlight,
- d. Star charts and
- e. Desktop globe.

9. **Learning Aids:**

- a. Planisphere star chart,
- b. Red-filtered flashlight, and
- c. Star charts.

10. **Test Details:** Nil.

11. **Remarks:**

- a. TPs 1–3 may be taught in the classroom or in the field, as appropriate.
- b. Cadets who are qualified Advanced Aerospace may assist with this instruction.

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**EO C440.07**

1. **Performance:** Operate a Telescope
2. **Conditions:**
  - a. Given:
    - (1) Telescope,
    - (2) Supervision, and
    - (3) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Classroom or training area large enough to accommodate the entire group.
3. **Standard:** The cadet shall operate a telescope by:
  - a. setting up a telescope;
  - b. operating a telescope; and
  - c. dismantling a telescope.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Identify the parts of a telescope, to include: <ol style="list-style-type: none"> <li>a. optical tube,</li> <li>b. optical tube mounts, to include:               <ol style="list-style-type: none"> <li>(1) equatorial (one axis of movement) mount, and</li> <li>(2) altazimuth (two axes of movement) mount;</li> </ol> </li> <li>c. finderscope,</li> <li>d. eyepiece,</li> <li>e. lens cover,</li> <li>f. mirrors,</li> <li>g. lenses,</li> <li>h. focus knob,</li> <li>i. tripod, and</li> <li>j. specialty computerized telescope parts, to include:               <ol style="list-style-type: none"> <li>(1) control panel,</li> <li>(2) on / off switch,</li> <li>(3) computer interface port, and</li> <li>(4) power cord.</li> </ol> </li> </ol>	Interactive Lecture	10 min	C3-286 (pp. 5–14)

TP	Description	Method	Time	Refs
TP2	<p>Describe telescope theory, to include:</p> <ul style="list-style-type: none"> <li>a. safety, to include:               <ul style="list-style-type: none"> <li>(1) never looking at the sun through a lens; and</li> <li>(2) careful handling of fragile equipment;</li> </ul> </li> <li>b. what the numbers represent, to include:               <ul style="list-style-type: none"> <li>(1) light gathering of main lens or mirror (aperture),</li> <li>(2) focal length, and</li> <li>(3) focal ratio;</li> </ul> </li> <li>c. seeing, to include:               <ul style="list-style-type: none"> <li>(1) image shaking, and</li> <li>(2) shimmering (atmospheric turbulence); and</li> </ul> </li> <li>d. the three main types of telescope optical systems, to include:               <ul style="list-style-type: none"> <li>(1) refractors,</li> <li>(2) Newtonian reflectors, and</li> <li>(3) Schmidt-Cassegrains.</li> </ul> </li> </ul>	Interactive Lecture	10 min	<p>C3-179 (pp. 60–81)</p> <p>C3-286 (p. 4, pp. 30–37)</p>
TP3	<p>Explain, demonstrate and have the cadets:</p> <ul style="list-style-type: none"> <li>a. set up a telescope by:               <ul style="list-style-type: none"> <li>(1) removing all parts from their containers, ensuring that the optical tube is placed on a sturdy level surface;</li> <li>(2) setting up the tripod;</li> <li>(3) attaching the telescope to the tripod;</li> <li>(4) attaching the finderscope (if required);</li> <li>(5) attaching the eyepiece (if required);</li> <li>(6) aligning the finderscope; and</li> <li>(7) aligning the telescope; and</li> </ul> </li> <li>b. operate and dismantle a telescope by:               <ul style="list-style-type: none"> <li>(1) adjusting the right ascension;</li> <li>(2) adjusting the declination;</li> <li>(3) removing the eyepiece (if required);</li> <li>(4) removing the finderscope (if required);</li> <li>(5) removing the telescope from its tripod;</li> </ul> </li> </ul>	Demonstration and Performance	30 min	C3-286 (pp. 6–14)

TP	Description	Method	Time	Refs
	(6) collapsing the tripod; and (7) returning all parts to their containers.			

5. **Time:**

- |    |                                |        |
|----|--------------------------------|--------|
| a. | Introduction / Conclusion:     | 10 min |
| b. | Interactive Lecture:           | 20 min |
| c. | Demonstration and Performance: | 30 min |
| d. | Total:                         | 60 min |

6. **Substantiation:**

- a. An interactive lecture was chosen for TPs 1 and 2 to orient the cadets to telescope theory and generate interest in the subject.
- b. A demonstration and performance was chosen for TP 3 as it allows the instructor to explain and demonstrate the telescope-handling skills the cadets are expected to acquire while providing an opportunity for the cadets to practice the skill under supervision.

7. **References:**

- a. C3-179 ISBN 1-55209-302-6 Dickenson, T. (2001). *Night watch: A practical guide to viewing the universe*. Willowdale, ON: Firefly Books.
- b. C3-286 11073-INST. Celestron. (2006). *CPC series instructional manual*. Torrance, CA: Celestron.

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area, and
- b. Telescope.

9. **Learning Aids:** Telescope.10. **Test Details:** Nil.11. **Remarks:** Cadets who are qualified Advanced Aerospace may assist with this instruction.

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**EO C440.08**

1. **Performance:** Watch *BLAST!* (*Balloon-Borne Large Aperture Sub- Millimetre Telescope*)
2. **Conditions:**
  - a. Given:
    - (1) *BLAST!* DVD
    - (2) Supervision, and
    - (3) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Classroom or training area large enough to accommodate the entire group.
3. **Standard:** The cadet shall watch *BLAST!* and discuss the BLAST mission, to include:
  - a. galactic cosmology,
  - b. extragalactic cosmology, and
  - c. BLAST mission design.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Describe the BLAST mission, to include: <ol style="list-style-type: none"> <li>a. observation of star formation;</li> <li>b. observation of galaxy formation; and</li> <li>c. the BLAST mission design.</li> </ol>	Interactive Lecture	10 min	C3-298
TP2	Have the cadets watch <i>BLAST!</i>	In-Class Activity	55 min	C3-295
TP3	Discuss the science and the design of the BLAST mission.	Group Discussion	15 min	

5. **Time:**
  - a. Introduction: 10 min
  - b. Interactive Lecture: 10 min
  - c. In-Class Activity: 55 min
  - d. Group Discussion: 15 min
  - e. Total: 90 min

6. **Substantiation:**

- a. An interactive lecture was chosen for TP 1 to introduce the cadets to cosmology and give an overview of the BLAST mission.
- b. An in-class activity was chosen for TP 2 as it is an interactive way to reinforce cosmology, provoke thought and stimulate interest among cadets.
- c. A group discussion was chosen for TP 3 as it allows the cadets to interact with their peers and share their knowledge, experiences, opinions, and feelings about cosmology using a balloon-borne large aperture sub-millimetre telescope.

7. **References:**

- a. C3-295 Devlin, P. (Producer & Director). (2008). *BLAST!* [Motion picture]. United States: The ArtistShare Project.
- b. C3-298 *BLAST (Balloon-Borne Large Aperture Sub-Millimetre Telescope)*. University of Pennsylvania Department of Physics and Astronomy. Retrieved January 30, 2009, from <http://blastexperiment.info/>

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area, and
- b. *BLAST!* DVD.

9. **Learning Aids:** Nil.

10. **Test Details:** Nil.

11. **Remarks:**

- a. It is recommended that this EO be presented in three consecutive periods.
- b. If EO C440.07 (Operate a Telescope) is selected, it is recommended that it be presented prior to this lesson.

**EO C440.09**

1. **Performance:** Describe the Relationship Between Gravity and Space-Time
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 describe the relationship between gravity and space-time, to include:
  - a. classical explanations of gravity, and
  - b. relativistic explanations of gravity and space-time.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Compare early ideas of gravity to gravitation under the theory of relativity, to include: <ol style="list-style-type: none"> <li>a. Newton's Universal Law of Gravitation,</li> <li>b. gravity as a force between masses,</li> <li>c. instantaneous transmission of gravity,</li> <li>d. the interdependence of space and time, and</li> <li>e. curvature of space-time.</li> </ol>	Interactive Lecture	10 min	C3-310 C3-312
TP2	Describe the Gravity Probe B (GP-B) mission, to include: <ol style="list-style-type: none"> <li>a. gyroscope operation,</li> <li>b. the spin-axis of a gyroscope,</li> <li>c. geodetic effect,</li> <li>d. frame-dragging effect,</li> <li>e. spacecraft components, and</li> <li>f. Canada's contribution to orientation control.</li> </ol>	Interactive Lecture	10 min	C3-310 C3-312
TP3	Have the cadets watch <i>Testing Einstein's Universe</i> while finding answers to assigned questions, to include: <ol style="list-style-type: none"> <li>a. tests of the 20<sup>th</sup> century,</li> <li>b. the concept of GP-B,</li> </ol>	In-Class Activity	25 min	C3-311

TP	Description	Method	Time	Refs
	c. mechanics of GP-B, and d. components of the GP-B spacecraft.			
TP4	Conduct an activity to correct answers to the assigned questions.	In-Class Activity	5 min	C3-310

5. **Time:**

- |    |                      |        |
|----|----------------------|--------|
| a. | Introduction:        | 10 min |
| b. | Interactive Lecture: | 20 min |
| c. | In-Class Activity:   | 30 min |
| d. | Total:               | 60 min |

6. **Substantiation:**

- An interactive lecture was chosen for TPs 1 and 2 to introduce theories of gravitation and give an overview of the Gravity Probe B mission.
- An in-class activity was chosen for TPs 3 and 4 as it is an interactive way to reinforce the relationship between gravity and space-time, provoke thought, and stimulate interest among cadets.

7. **References:**

- C3-310 Range, S. K. (2004). *Gravity Probe B: An educator's guide*. Washington, DC: NASA. Retrieved February 6, 2009, from <http://einstein.stanford.edu/RESOURCES/education-index.html#guide>
- C3-311 Bartel, N. (Producer & Director). (2003). *Testing Einstein's universe* [Motion picture]. Canada: York University.
- C3-312 Range, S. K. (2008). *Gravity Probe B: Testing Einstein's universe*. Retrieved February 6, 2009, from <http://einstein.stanford.edu/index.html>

8. **Training Aids:**

- Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area,
- WMV video file *Newtons\_Universe\_Anima* from Reference C3-312,
- WMV video file *Einsteins\_Universe\_Anima* from Reference C3-312,
- WMV video file *Rel\_gyro\_expt-anima* from Reference C3-312,
- WMV video file *Simple\_expt\_anima* from Reference C3-312,
- WMV video file *DF-Satellite* from Reference C3-312,
- WMV video file *SConSquid* from Reference C3-312, and
- Testing Einstein's Universe* DVD.

9. **Learning Aids:** Nil.

10. **Test Details:** Nil.
11. **Remarks:** Nil.

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**EO C440.10**

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>

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.



**EO C440.11**

1. **Performance:** Watch *Einstein's Big Idea*
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 watch *Einstein's Big Idea* and discuss the history of the formula  $E=mc^2$ , to include:
  - a. development of physics,
  - b. applications of nuclear physics, and
  - c. history of the principle investigators.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Conduct an activity where the cadets: <ol style="list-style-type: none"> <li>a. define the word "energy";</li> <li>b. describe what kinds of energy they have used today; and</li> <li>c. describe the difference between sources of energy (eg, sun, wood, oil, wind, or food) and energy itself (eg, light, heat, electrical or mechanical action).</li> </ol>	In-Class Activity	5 min	C3-319 (p. 3)
TP2	Have the cadets determine that atoms of matter have mass by: <ol style="list-style-type: none"> <li>a. examining a list of common materials;</li> <li>b. determining what elements are in those materials;</li> <li>c. locating the elements in a periodic table; and</li> <li>d. determining the mass of those elements' atoms.</li> </ol>	In-Class Activity	10 min	C3-319 (p. 3)
TP3	Have the cadets watch <i>Einstein's Big Idea</i> and make notes on topics assigned, to include: <ol style="list-style-type: none"> <li>a. energy,</li> <li>b. mass,</li> <li>c. light,</li> </ol>	In-Class Activity	110 min	C3-320

TP	Description	Method	Time	Refs
	d. velocity, e. development of the equation $E=mc^2$ , and f. confirmation of the equation $E=mc^2$ .			
TP4	Conduct an activity to create a timeline of the development of the formula $E=mc^2$ .	In-Class Activity	15 min	C3-319 (pp. 4–5)

5. **Time:**

- a. Introduction / Conclusion: 10 min
- b. In-Class Activity: 140 min
- c. Total: 150 min

6. **Substantiation:** An in-class activity was chosen for this lesson as it is an interactive way to provoke thought and stimulate interest among cadets about the development of the formula  $E=mc^2$ .7. **References:**

- a. C3-319 NOVA. (2005). *Teacher's guide: Einstein's big idea*. Retrieved January 30, 2009 from <http://www.pbs.org/wgbh/nova/einstein/>
- b. C3-320 Johnstone, G. (Producer & Director). (2005). *Einstein's big idea* [Motion picture]. United States: WBGH Educational Foundation.

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area, and
- b. *Einstein's Big Idea* DVD.

9. **Learning Aids:**

- a. Periodic table, and
- b. Note template handout.

10. **Test Details:** Nil.11. **Remarks:**

- a. If EO C440.09 (Describe the Relationship Between Gravity and Space-Time) or EO C440.10 (Discuss Kinetic and Potential Energy) are also selected, they should be presented prior to this lesson to introduce concepts of energy.
- b. It is recommended that Chapters 1–6 of *Einstein's Big Idea* be presented in three consecutive periods and Chapters 7–9 be presented in two consecutive periods, all on two consecutive training days.

**PO 460**

1. **Performance:** Describe Aerodrome Operations Career Opportunities
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 will identify aerodrome operations career opportunities.
4. **Remarks:** Nil.
5. **Complementary Material:**
  - a. This PO is complementary material designed to provide an opportunity for the cadets to continue to develop knowledge and skills related to aerodrome operations, specifically:
    - (1) EO C460.01 (Describe Aerodrome Operations Career Opportunities),
    - (2) EO C460.02 (Describe Air Traffic Control [ATC] Career Opportunities), and
    - (3) EO C460.03 (Describe Airport Security Career Opportunities).
  - b. Complementary material from PO 360 that was not conducted in the previous year may be selected as complementary training in Proficiency Level Four.

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**EO C460.01**

1. **Performance:** Describe Aerodrome Operations Career Opportunities
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:
  - a. describe aerodrome operations career opportunities;
  - b. discuss the skills and training required; and
  - c. identify training institutions.

4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Have the cadets brainstorm aerodrome operations career opportunities.	In-Class Activity	10 min	
TP2	Conduct a group discussion on aerodrome operations career opportunities, specifically: <ol style="list-style-type: none"> <li>a. skills and training required, and</li> <li>b. training institutions.</li> </ol>	Group Discussion	15 min	C3-309 C3-313

5. **Time:**

- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 5 min  |
| b. | In-Class Activity:         | 10 min |
| c. | Group Discussion:          | 15 min |
| d. | Total:                     | 30 min |

6. **Substantiation:**

- a. An in-class activity was chosen for TP 1 as it is an interactive way to provoke thought and stimulate interest among cadets.
- b. A group discussion was chosen for TP 2 as it allows the cadets to interact with their peers and share their knowledge, experiences, opinions, and feelings on aerodrome operations career opportunities.

7. **References:**

- a. C3-309 Avjobs.com. (2009). *Aviation career overviews*. Retrieved February 9, 2009, from <http://www.avjobs.com/careers/index.asp>
- b. C3-313 Canadian Airports Council. (2009). *Post secondary programs*. Retrieved February 9, 2009, from [http://www.cacairports.ca/english/careers/post\\_secondary\\_programs.php](http://www.cacairports.ca/english/careers/post_secondary_programs.php)

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area, and
- b. Markers.

9. **Learning Aids:** Nil.

10. **Test Details:** Nil.

11. **Remarks:** If available, a guest speaker from the field of aerodrome operations may be used for this lesson.

**EO C460.02**

1. **Performance:** Describe Air Traffic Control (ATC) Career Opportunities
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 describe ATC career opportunities, to include:
  - a. the selection requirements,
  - b. the selection process, and
  - c. the training process.

4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Have the cadets brainstorm ATC career opportunities.	In-Class Activity	10 min	
TP2	Conduct a group discussion on ATC career opportunities, to include: <ol style="list-style-type: none"> <li>a. selection requirements,</li> <li>b. selection process, and</li> <li>c. training process.</li> </ol>	Group Discussion	15 min	C3-332

5. **Time:**
  - a. Introduction / Conclusion: 5 min
  - b. In-Class Activity: 10 min
  - c. Group Discussion: 15 min
  - d. Total: 30 min
6. **Substantiation:**
  - a. An in-class activity was chosen for TP 1 as it is an interactive way to provoke thought and stimulate interest in ATC career opportunities among cadets.
  - b. A group discussion was chosen for TP 2 as it allows the cadets to interact with their peers and share their knowledge, opinions and feelings about ATC career opportunities.
7. **References:** C3-332 NAV CANADA. (2009). *Take charge of your career*. Retrieved February 23, 2009, from <http://takecharge.navcanda.ca>

8. **Training Aids:** Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area.
9. **Learning Aids:** Nil.
10. **Test Details:** Nil.
11. **Remarks:** If available, a guest speaker from the field of air traffic control may be used for this lesson.



**EO C460.03**

1. **Performance:** Describe Airport Security Career Opportunities
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:
  - a. describe airport security career opportunities;
  - b. discuss the skills and training required; and
  - c. identify training institutions.

4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Have the cadets brainstorm airport security career opportunities.	In-Class Activity	10 min	
TP2	Conduct a group discussion on airport security career opportunities, specifically: <ol style="list-style-type: none"> <li>a. skills and training required, and</li> <li>b. training institutions.</li> </ol>	Group Discussion	15 min	C3-309 C3-316 C3-317

5. **Time:**

- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 5 min  |
| b. | In-Class Activity:         | 10 min |
| c. | Group Discussion:          | 15 min |
| d. | Total:                     | 30 min |

6. **Substantiation:**

- a. An in-class activity was chosen for TP 1 as it is an interactive way to provoke thought and stimulate interest among cadets.
- b. A group discussion was chosen for TP 2 as it allows the cadets to interact with their peers and share their knowledge, experiences, opinions, and feelings on airport security career opportunities.

7. **References:**

- a. C3-309 Avjobs.com. (2009). *Aviation career overviews*. Retrieved February 9, 2009, from <http://www.avjobs.com/careers/index.asp>
- b. C3-316 Canadian Air Transport Security Authority. (2008). *Screening officers – Roles and responsibilities*. Retrieved February 10, 2009, from <http://www.catsa-acsta.gc.ca/so-ac/english/roles/>
- c. C3-317 Canadian Air Transport Security Authority. (2009). *Employment opportunities*. Retrieved February 10, 2009, from [http://www.catsa-acsta.gc.ca/english/about\\_propos/opp/index.cfm](http://www.catsa-acsta.gc.ca/english/about_propos/opp/index.cfm)

8. **Training Aids:** Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area.

9. **Learning Aids:** Nil.

10. **Test Details:** Nil.

11. **Remarks:** If available, a guest speaker from the field of airport security may be used for this lesson.

**PO 470**

1. **Performance:** Discuss Aspects of Aircraft Manufacturing and Maintenance
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 will discuss aspects of aircraft manufacturing and maintenance.
4. **Remarks:** Nil.
5. **Complementary Material:**
  - a. This PO is complementary material designed to provide an opportunity for the cadets to continue to develop knowledge and skills related to aircraft manufacturing and maintenance, specifically:
    - (1) EO C470.01 (Discuss Aircraft Manufacturers),
    - (2) EO C470.02 (Discuss Aircraft Assembly),
    - (3) EO C470.03 (Identify Aviation Hardware), and
    - (4) EO C470.04 (Disassemble and Reassemble a Small Engine).
  - b. Complementary material from PO 370 that was not conducted in the previous year may be selected as complementary training in Proficiency Level Four.

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**EO C470.01**

1. **Performance:** Discuss Aircraft Manufacturers
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:
  - a. discuss international partnerships between aircraft manufacturers; and
  - b. identify unmanned aerial vehicle (UAV) manufacturers.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Conduct an activity where the cadets will: <ol style="list-style-type: none"> <li>a. review a summary of an international partnership between aircraft manufacturers; and</li> <li>b. make a short oral presentation on the international partnership.</li> </ol>	In-Class Activity	20 min	C3-321 C3-322 C3-323
TP2	Identify UAV manufacturers.	Interactive Lecture	5 min	C3-324

5. **Time:**
  - a. Introduction / Conclusion: 5 min
  - b. In-Class Activity: 20 min
  - c. Interactive Lecture: 5 min
  - d. Total: 30 min
6. **Substantiation:**
  - a. An in-class activity was chosen for TP 1 as it is an interactive way to provoke thought and stimulate interest among cadets.
  - b. An interactive lecture was chosen for TP 2 to identify UAV manufacturers.

7. **References:**

- a. C3-321 ISBN 978-2-921393-91-1 Bombardier Inc. (2009). *Canada's Bombardier*. Canada: Bombardier Inc.
- b. C3-322 Government of Canada. (2008). *Canada's aerospace advantages*. Retrieved February 10, 2009 from <http://investincanada.gc.ca/eng/industry-sectors/advanced-manufacturing/aerospace/aerospace-advantages.aspx>
- c. C3-323 Industry Canada. (2009). *Aerospace in Canada*. Retrieved February 10, 2009 from <http://www.ic.gc.ca/eic/site/ad-ad.nsf/eng/ad03909.html>
- d. C3-324 Thirty Thousand Feet Aviation Directory. (2009). *Unmanned aerial vehicles*. Retrieved February 10, 2009, from <http://www.thirtythousandfeet.com/uav.htm>

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area, and
- b. List of international partnerships.

9. **Learning Aids:**

- a. Pen / pencil, and
- b. List of international partnerships,
- c. International Partnerships Summary Sheets, and
- d. UAV Manufacturers Worksheet.

10. **Test Details:** Nil.

11. **Remarks:** Cadets who are qualified Advanced Aviation Technology – Aircraft Manufacturing and Maintenance may be able to assist with this lesson.

**EO C470.02**

1. **Performance:** Discuss Aircraft Assembly
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 aircraft assembly, to include:
  - a. methods of assembly, and
  - b. assembly areas.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Describe different methods of assembly of components used by: <ol style="list-style-type: none"> <li>a. small manufacturers, and</li> <li>b. large manufacturers.</li> </ol>	Interactive Lecture	15 min	C3-105 C3-136 (pp. 1-39 to 1-51)
TP2	Discuss manufacturers' assembly areas, to include: <ol style="list-style-type: none"> <li>a. a small manufacturer's shop, and</li> <li>b. a large manufacturer's assembly line.</li> </ol>	Interactive Lecture	10 min	C3-105 C3-136 (pp. 1-39 to 1-50)

5. **Time:**
  - a. Introduction / Conclusion: 5 min
  - b. Interactive Lecture: 25 min
  - c. Total: 30 min
6. **Substantiation:** An interactive lecture was chosen for this lesson to introduce aspects of aircraft assembly methods and give an overview of them.
7. **References:**
  - a. C3-105 Brisley, T., & Pascaud, S. (Executive Producer), & Bowie, B. (Writer / Director) (2003). *World's biggest airliner: The Airbus A380* [Motion Picture]. United States: The Learning Channel.
  - b. C3-136 ISBN 0-88487-207-6 Sanderson Training Systems. (2001). *A&P technician airframe textbook*. Englewood, CO: Jeppesen Sanderson Inc.

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area.
- b. DVD *World's biggest airliner: The Airbus A380* [Motion Picture]. Brisley, T., Pascaud, S. (Executive Producer), & Bowie, B. (Writer / Director) (2003). United States: The Learning Channel.

9. **Learning Aids:** Nil.

10. **Test Details:** Nil.

11. **Remarks:**

- a. The cadets may have previously viewed The World's Biggest Airliner: The Airbus A380 if EO C270.04 was selected in Proficiency Level Two. This lesson focuses and expands on the assembly of aircraft.
- b. Cadets who are qualified Advanced Aviation Technology – Aircraft Manufacturing and Maintenance may be able to assist with this lesson.



**EO C470.03**

1. **Performance:** Identify Aviation Hardware
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 identify aviation hardware, to include:
  - a. bolts,
  - b. rivets,
  - c. screws, and
  - d. turnlock fasteners.
4. **Teaching Points:** Conduct an activity where the cadets will identify aviation hardware, to include:
  - a. bolts,
  - b. rivets,
  - c. screws, and
  - d. turnlock fasteners.
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 and stimulate interest among cadets.
7. **References:**
  - a. C3-136 ISBN 0-88487-207-6 Sanderson Training Systems. (2001). *A&P technician airframe textbook*. Englewood, CO: Jeppesen Sanderson Inc.
  - b. C3-137 ISBN 0-88487-203-3 Sanderson Training Systems. (2000). *A&P technician general textbook*. Englewood, CO: Jeppesen Sanderson Inc.

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area,
- b. Aviation Hardware Information Sheets, and
- c. Aviation Hardware Identification Worksheet Answer Key.

9. **Learning Aids:**

- a. Pen / pencil, and
- b. Aviation Hardware Handout, and
- c. Aviation Hardware Identification Worksheet.

10. **Test Details:** Nil.

11. **Remarks:** Cadets who are qualified Advanced Aviation Technology – Aircraft Manufacturing and Maintenance may be able to assist with this lesson.

**EO C470.04**

1. **Performance:** Disassemble and Reassemble a Small Engine
2. **Conditions:**
  - a. Given:
    - (1) Small engine,
    - (2) Tools,
    - (3) Supervision, and
    - (4) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Classroom or training area large enough to accommodate the entire group.
3. **Standard:** The cadet shall:
  - a. identify the major components and parts of a small engine;
  - b. disassemble the engine; and
  - c. reassemble the engine.
4. **Teaching Points:** Conduct an activity where the cadets will:
  - a. identify the major components and parts of the small engine;
  - b. disassemble the engine; and
  - c. reassemble the engine.
5. **Time:**

a. Introduction / Conclusion:	10 min
b. Practical Activity:	80 min
c. Total:	90 min
6. **Substantiation:** A practical activity was chosen for this lesson as it is an interactive way to allow the cadets to practice aircraft maintenance skills in a safe and controlled environment. This activity contributes to the development of aircraft maintenance skills and knowledge in a fun and challenging setting.
7. **References:** Nil.
8. **Training Aids:**
  - a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area, and
  - b. Small engine maintenance manual (if available).

9. **Learning Aids:**

- a. Pen / Pencil,
- b. Paper,
- c. Small engine,
- d. Tools, and
- e. Small engine maintenance manual (if available).

10. **Test Details:** Nil.

11. **Remarks:**

- a. Extra instructors will be required for this lesson to assist with supervision.
- b. Consideration may be given to using SME volunteers from within the community to assist.
- c. Cadets who are qualified Advanced Aviation Technology – Aircraft Manufacturing and Maintenance may be able to assist with this lesson.
- d. There is no instructional guide for this EO.

**PO 490**

1. **Performance:** Participate in an Aircrew Survival Exercise
2. **Conditions:**
  - a. Given:
    - (1) Matches,
    - (2) Firewood / kindling / tinder,
    - (3) Fire extinguisher,
    - (4) Water,
    - (5) Shovel,
    - (6) Global Positioning System (GPS) receiver,
    - (7) Other materials and equipment as required,
    - (8) Supervision, and
    - (9) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Field setting during a field training exercise.
3. **Standard:** The cadet will participate in an aircrew survival exercise, to include:
  - a. assembling emergency survival kits;
  - b. operating a stove and lantern;
  - c. tying knots and lashings;
  - d. navigating using a GPS receiver; and
  - e. lighting a fire without matches.
4. **Remarks:** Nil.
5. **Complementary Material:**
  - a. Complementary material associated with PO 490 is designed to enhance the cadet's knowledge of aircrew survival training through a number of activities, specifically:
    - (1) EO C490.01 (Describe Climatic and Seasonal Concerns),
    - (2) EO C490.02 (Improvise Tools for Use in a Survival Situation),
    - (3) EO C490.03 (Move a Casualty to Shelter),
    - (4) EO C490.04 (Practice Safe Toolcraft),
    - (5) EO C490.05 (Navigate a Route Using a Map and Compass),

- (6) EO C490.06 (Erect, Tear Down and Pack Tents) and,
  - (7) EO C490.07 (Construct a Hootchie or Lean-to-Style Shelter).
- b. Complementary material from PO 390 that was not conducted in the previous year may be selected as complementary training in Proficiency Level Four.

**EO M490.01**

1. **Performance:** Assemble an Emergency Survival Kit
2. **Conditions:**
  - a. Given:
    - (1) Supervision, and
    - (2) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Classroom or field setting, during the day.
3. **Standard:** The cadet shall assemble an emergency survival kit.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Discuss the characteristics of an emergency survival kit, to include: <ol style="list-style-type: none"> <li>a. essential items, and</li> <li>b. small and easy to carry in a pocket.</li> </ol>	Interactive Lecture	5 min	C3-002 (p. 26)
TP2	Explain that emergency survival kit items should be placed in a durable container that is lightweight and waterproof, such as: <ol style="list-style-type: none"> <li>a. hard plastic,</li> <li>b. flexible plastic, or</li> <li>c. metal.</li> </ol>	Interactive Lecture	5 min	C2-010 (pp. 648–655)
TP3	Explain the purpose of each survival kit item and have the cadets, as a group, assemble an emergency survival kit: <ol style="list-style-type: none"> <li>a. adhesive bandages,</li> <li>b. aluminum foil,</li> <li>c. antibiotic tablets,</li> <li>d. button compass,</li> <li>e. candle,</li> <li>f. condom,</li> <li>g. cord,</li> <li>h. cotton balls,</li> <li>i. emergency blanket,</li> <li>j. fish hooks,</li> <li>k. fishing line,</li> <li>l. fishing sinkers,</li> </ol>	In-Class Activity	15 min	C3-002 (pp. 26–32) C3-003 (p. 8, pp. 14–16) C3-150 (pp. 33–37)

TP	Description	Method	Time	Refs
	m. flexible saw, n. garbage bag (small), o. hard candies, p. magnifying glass, q. mirror (small), r. moleskin, s. pain reliever (pills), t. paper, u. pencil, v. personal medication, w. resealable plastic bags (very small), x. safety pins, y. salt, z. sewing needles, aa. small folding knife, bb. snare wire, cc. thread, dd. tweezers, ee. water purification tablets, ff. waterproof matches, and gg. whistle.  Note: This list is not exhaustive and is designed to give cadets an idea of what an emergency survival kit could contain.			

5. **Time:**

- |    |                            |        |
|----|----------------------------|--------|
| a. | Introduction / Conclusion: | 5 min  |
| b. | Interactive Lecture:       | 10 min |
| c. | In-Class Activity:         | 15 min |
| d. | Total:                     | 30 min |

6. **Substantiation:**

- An interactive lecture was chosen for TPs 1 and 2 to present basic material and give direction on assembling an emergency survival kit.
- An in-class activity was chosen for TP 3 as it is an interactive way to provoke thought and stimulate interest among cadets about emergency survival kits.



7. **References:**

- a. C2-010 ISBN 0-375-70323-3 Rawlins, C., & Fletcher, C. (2004). *The complete walker IV*. New York, NY: Alfred A. Knopf.
- b. C3-002 ISBN 0-00-653140-7 Wiseman, J. (1999). *The SAS survival handbook*. Hammersmith, London: HarperCollins Publishers.
- c. C3-003 ISBN 1-896713-00-9 Tawrell, P. (1996). *Camping and wilderness survival: The ultimate outdoors book*. Green Valley, ON: Author.
- d. C3-150 ISBN 978-0-8117-3292-5 Davenport, G. (2002). *Wilderness survival*. Mechanicsburg, PA: Stackpole Books.

8. **Training Aids:** Presentation aids (eg, whiteboard / flip chart / OHP) appropriate for the classroom / training area.

9. **Learning Aids:** Sample emergency survival kit items, such as:

- a. hard or flexible plastic or metal container,
- b. adhesive bandages,
- c. aluminum foil,
- d. antibiotic tablets,
- e. button compass,
- f. candle,
- g. condom,
- h. cord,
- i. cotton balls,
- j. emergency blanket,
- k. fish hooks,
- l. fishing line,
- m. fishing sinkers,
- n. flexible saw,
- o. garbage bag (small),
- p. hard candies,
- q. magnifying glass,
- r. mirror (small),
- s. moleskin,
- t. pain reliever (pills),
- u. paper,

- v. pencil,
- w. personal medication,
- x. resealable plastic bags (very small),
- y. safety pins,
- z. salt,
- aa. sewing needles,
- bb. small folding knife,
- cc. snare wire,
- dd. thread,
- ee. tweezers,
- ff. water purification tablets,
- gg. waterproof matches, and
- hh. whistle.

10. **Test Details:** Nil

11. **Remarks:** Cadets who are qualified Survival Instructor may assist with this instruction.

**EO M490.02**

1. **Performance:** Operate a Stove and a Lantern
2. **Conditions:**
  - a. Given:
    - (1) Two-burner naphtha stove,
    - (2) Dual-mantle naphtha lantern,
    - (3) Lantern storage carrier,
    - (4) Mantles,
    - (5) Naphtha,
    - (6) Funnel,
    - (7) Drip pan,
    - (8) Matches,
    - (9) Needle-nose pliers,
    - (10) Supervision, and
    - (11) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Field setting.
3. **Standard:** The cadet shall operate a stove and a lantern, to include:
  - a. filling;
  - b. pressurizing;
  - c. lighting;
  - d. extinguishing;
  - e. draining;
  - f. cleaning;
  - g. performing minor maintenance; and
  - h. storing.

## 4. Teaching Points:

TP	Description	Method	Time	Refs
TP1	Identify the characteristics of a two-burner naphtha stove, to include: a. operational temperature, b. fuel type, and c. parts and accessories.	Interactive Lecture	10 min	See Remarks, para 11b.
TP2	Identify the characteristics of a dual-mantle naphtha lantern, to include: a. parts and accessories, and b. precautions.	Interactive Lecture	5 min	See Remarks, para 11b.
TP3	Explain, demonstrate and have the cadets fill and drain a stove and a lantern, utilizing a drip pan. Note: A spill response kit should be on hand when fuelling and emptying stoves and lanterns.	Demonstration and Performance	15 min	See Remarks, para 11b.
TP4	Explain, demonstrate and have the cadets operate a two-burner naphtha stove, to include: a. assembling; b. lighting and extinguishing, to include: (1) pressurizing the fuel tank; (2) lighting the master burner; (3) lighting the auxiliary burner; and (4) extinguishing the burner; and c. disassembling after use.	Demonstration and Performance	15 min	See Remarks, para 11b.
TP5	Explain, demonstrate and have the cadets operate a dual-mantle naphtha lantern, to include: a. assembling; b. lighting and extinguishing, to include: (1) pressurizing the fuel tank, (2) lighting the lantern, and (3) extinguishing the lantern; and c. storing after use.	Demonstration and Performance	20 min	See Remarks, para 11b.
TP6	Explain, demonstrate and have the cadets perform minor maintenance on a stove and a lantern, to include: a. cleaning the stove, b. cleaning the lantern,	Demonstration and Performance	15 min	See Remarks, para 11b.

TP	Description	Method	Time	Refs
	c. replacing a mantle; and d. inspecting the pump assembly.			

5. **Time:**

- |    |                                |        |
|----|--------------------------------|--------|
| a. | Introduction / Conclusion:     | 10 min |
| b. | Interactive Lecture:           | 15 min |
| c. | Demonstration and Performance: | 65 min |
| d. | Total:                         | 90 min |

6. **Substantiation:**

- An interactive lecture was chosen for TPs 1 and 2 to introduce to the cadets the characteristics of the stove and of the lantern.
- A demonstration and performance was chosen for TPs 3–6 as it allows the instructor to explain and demonstrate how to operate a stove and lantern while providing an opportunity for the cadets to practice the skill under supervision.

7. **References:** Manuals for stove and lantern types being used.

8. **Training Aids:**

- Two-burner naphtha stove,
- Dual-mantle naphtha lantern,
- Lantern storage carrier,
- Mantles,
- Naphtha,
- Fire extinguisher,
- Funnel,
- Drip pan,
- Matches,
- Needle-nose pliers,
- Spill response kit,
- Manual for stove, and
- Manual for lantern.

9. **Learning Aids:**

- Two-burner naphtha stove,
- Dual-mantle naphtha lantern,
- Lantern storage carrier,

- d. Mantles,
- e. Naphtha,
- f. Funnel,
- g. Drip pan,
- h. Matches, and
- i. Needle-nose pliers.

10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, 490 PC.

11. **Remarks:**

- a. The spill response kit will be placed at the fuelling area.
- b. Refer to the manuals for all operations and maintenance of the two-burner naphtha stove and dual-mantle naphtha lantern.
- c. A fire extinguisher will be at each site where stoves and lanterns are being lit.
- d. When cleaning the stove, the fuel tank is to be wiped with fresh naphtha. Protective gloves and clothing are to be worn when completing this task. Acceptable materials for gloves are neoprene and nitrile / viton. It is also recommended that safety glasses, splash goggles, or face shield be worn. Have eye water wash available.
- e. Cadets who are qualified Survival Instructor may assist with this instruction.

**EO M490.03**

1. **Performance:** Tie Knots and Lashings
2. **Conditions:**
  - a. Given:
    - (1) Braided rope,
    - (2) Poles (2 m long, 6 cm in diameter),
    - (3) Supervision, and
    - (4) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Field setting, during the day.
3. **Standard:** The cadet shall tie knots and lashings, to include:
  - a. reef knot,
  - b. figure-of-eight knot,
  - c. clove hitch,
  - d. bowline,
  - e. round lashing,
  - f. square lashing, and
  - g. figure-of-eight lashing.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Describe the parts of a rope, to include: <ol style="list-style-type: none"> <li>a. the working end (bitter end),</li> <li>b. the working part (running part),</li> <li>c. the standing end,</li> <li>d. the standing part,</li> <li>e. the turn or loop, and</li> <li>f. the bight.</li> </ol>	Interactive Lecture	10 min	C3 026 (pp. 28–29)
TP2	Explain, demonstrate and have the cadets tie the following knots: <ol style="list-style-type: none"> <li>a. reef knot,</li> <li>b. figure-of-eight knot,</li> <li>c. clove hitch, and</li> <li>d. bowline.</li> </ol>	Demonstration and Performance	20 min	C3-026 (p. 44, p. 98, p. 104, p. 162)

TP	Description	Method	Time	Refs
TP3	Explain, demonstrate and have the cadets tie the following lashings: a. round, b. square, and c. figure-of-eight.	Demonstration and Performance	20 min	C3-026 (p. 180, p. 182, p. 186)

5. **Time:**

- |    |                                |        |
|----|--------------------------------|--------|
| a. | Introduction / Conclusion:     | 10 min |
| b. | Interactive Lecture:           | 10 min |
| c. | Demonstration and Performance: | 40 min |
| d. | Total:                         | 60 min |

6. **Substantiation:**

- An interactive lecture was chosen for TP 1 to present background material on rope terminology.
- A demonstration and performance was chosen for TPs 2 and 3 as it allows the instructor to explain and demonstrate tying knots and lashings while providing an opportunity for the cadets to practice and develop these skills under supervision.

7. **References:** C3-026 ISBN 1-55267-218-2 Pawson, D. (2001). *Pocket guide to knots and splices*. London, England: PRC Publishing.

8. **Training Aids:**

- Presentation aids (eg, whiteboard / flip chart / OHP) appropriate for the classroom / training area,
- Knife,
- Braided rope,
- Poles, and
- Knot-tying and Lashings Instructions handout.

9. **Learning Aids:**

- Braided rope,
- Poles, and
- Knot-tying and Lashings Instructions handout.

10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, 490 PC.

11. **Remarks:**

- The cadet will require two 3-m (10-foot) pieces of 10-mm (3/8 inch) braided rope to perform the required knots and lashings.
- Cadets who are qualified Survival Instructor may assist with this instruction.



**EO M490.04**

1. **Performance:** Navigate to a Waypoint Using a Global Positioning System (GPS) Receiver

2. **Conditions:**

- a. Given:
  - (1) GPS receiver,
  - (2) Supervision, and
  - (3) Assistance as required.
- b. Denied: Nil.
- c. Environmental: Field setting, during the day.

3. **Standard:** The cadet shall navigate to a waypoint using a GPS receiver by:

- a. turning on the GPS receiver;
- b. selecting the waypoint list;
- c. selecting a waypoint from the list; and
- d. using the GPS receiver to move to the waypoint.

4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Explain and demonstrate: <ul style="list-style-type: none"> <li>a. turning on the GPS receiver;</li> <li>b. selecting the waypoint list;</li> <li>c. selecting a waypoint; and</li> <li>d. using the GPS receiver to move to a waypoint.</li> </ul>	Demonstration	30 min	C2-143
TP2	Have the cadets practice navigating to a waypoint using a GPS receiver.	Practical Activity	80 min	

5. **Time:**

- a. Introduction / Conclusion: 10 min
- b. Demonstration: 30 min
- c. Practical Activity: 80 min
- d. Total: 120 min

6. **Substantiation:**

- a. A demonstration was chosen for TP 1 as it allows the instructor to demonstrate and explain how to navigate to a waypoint using a GPS receiver.
- b. A practical activity was chosen for TP 2 as it allows the instructor to introduce the GPS receiver while providing an opportunity for the cadets to practice navigating to a waypoint using a GPS receiver under supervision.

7. **References:** C2-143 ISBN 1-58923-145-7 Featherstone, S. (2004). *Outdoor guide to using your GPS*. Chanhassen, MN: Creative Publishing International, Inc.

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area,
- b. GPS receiver with charged batteries,
- c. Waypoint containers,
- d. Waypoint locations,
- e. Hand-held radio (one per group),
- f. Waypoint form (one per group), and
- g. Pen / pencil.
- h. Prepared course

9. **Learning Aids:**

- a. GPS receiver with charged batteries (one per group),
- b. Hand-held radio with charged batteries (one per group),
- c. Waypoint form (one per group), and
- d. Pen / pencil.

10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, 490 PC.

11. **Remarks:**

- a. Several waypoints should be set up before this lesson.
- b. The waypoints should be indicated on the ground or object by a marker.
- c. The waypoints should be 200–500 m apart.
- d. Cadets who are qualified Survival Instructor may assist with this instruction.

**EO M490.05**

1. **Performance:** Light Fires Using Improvised Ignition
2. **Conditions:**
  - a. Given:
    - (1) Aluminium can,
    - (2) Battery,
    - (3) Chocolate,
    - (4) Cordage,
    - (5) Knife,
    - (6) Magnesium fire starter,
    - (7) Magnifying lens,
    - (8) Shovel,
    - (9) Steel wool,
    - (10) Sunglasses,
    - (11) Toothpaste,
    - (12) Water,
    - (13) Wire,
    - (14) Supervision, and
    - (15) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Field exercise during the day, with a low to moderate rating under the Canadian Wildland Fire Information System (CWFIS).
3. **Standard:** The cadet shall light fires using improvised ignition by:
  - a. selecting an improvised ignition from the following:
    - (1) magnesium fire starter,
    - (2) aluminium can and chocolate,
    - (3) battery, wire and steel wool, and
    - (4) magnifying lens;
  - b. constructing the fire;
  - c. lighting and maintaining the fire;
  - d. extinguishing the fire; and
  - e. repeating steps b–d for each type of ignition.

4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Explain and demonstrate lighting a fire using a bow drill.	Demonstration	15 min	C3-003 (pp. 127–128)
TP2	Explain and demonstrate lighting a fire using a fire piston.	Demonstration	15 min	C3-315
TP3	Explain, demonstrate and have the cadets light a fire using a magnesium fire starter.	Demonstration and Performance	20 min	C3-002 (p. 275) C3-003 (p. 129)
TP4	Explain, demonstrate and have the cadets light a fire using an aluminium can and a bar of chocolate, to include: a. polishing the aluminium can base; and b. igniting tinder with the focused rays of the sun.	Demonstration and Performance	20 min	C3-314
TP5	Explain, demonstrate and have the cadets light a fire using a battery, wire and steel wool.	Demonstration and Performance	20 min	C3-002 (p. 275)
TP6	Explain, demonstrate and have the cadets light a fire using a magnifying lens.	Demonstration and Performance	20 min	C3-002 (p. 275) C3-003 (p. 129)

5. **Time:**

- |    |                                |         |
|----|--------------------------------|---------|
| a. | Introduction / Conclusion:     | 10 min  |
| b. | Demonstration:                 | 30 min  |
| c. | Demonstration and Performance: | 80 min  |
| d. | Total:                         | 120 min |

6. **Substantiation:**

- A demonstration was chosen for TPs 1 and 2 to allow the cadets to observe lighting a fire with a bow drill and a fire piston, and to stimulate interest in lighting fires using improvised ignition.
- A demonstration and performance was chosen for TPs 3–6 as it allows the instructor to explain and demonstrate lighting fires with improvised ignition and permits the cadets to practice lighting fires under supervision.

7. **References:**

- C3-002 ISBN 0-00-653140-7 Wiseman, J. (1999). *The SAS survival handbook*. Hammersmith, London: HarperCollins Publishers.
- C3-003 ISBN 1-896713-00-9 Tawrell, P. (1996). *Camping and wilderness survival: The ultimate outdoors book*. Green Valley, ON: Author.

- c. C3-314 Wildwood Survival. (2009). *Fire from a can of coke and a chocolate bar*. Retrieved February 9, 2009, from <http://www.wildwoodsurvival.com/survival/fire/cokeandchocolatebar/index.html>
- d. C3-315 Primitive Ways. (1996). *The fire piston: Ancient firemaking machine*. Retrieved February 9, 2009, from [http://www.primitiveways.com/fire\\_piston.html](http://www.primitiveways.com/fire_piston.html)

8. **Training Aids:**

- a. Aluminium can,
- b. Battery,
- c. Chocolate,
- d. Cordage,
- e. Bow drill,
- f. Fire piston,
- g. Fire extinguisher,
- h. Gasoline,
- i. Knife,
- j. Magnesium fire starter,
- k. Magnifying lens,
- l. Rags,
- m. Shovel,
- n. Steel wool,
- o. Sunglasses,
- p. Toothpaste
- q. Water, and
- r. Wire.

9. **Learning Aids:**

- a. Aluminium can,
- b. Battery,
- c. Chocolate,
- d. Cordage,
- e. Knife,
- f. Magnesium fire starter,
- g. Magnifying lens,

- h. Steel wool,
- i. Sunglasses, and
- j. Toothpaste.

10. **Test Details:** This EO is assessed IAW Chapter 3, Annex B, 490 PC.

11. **Remarks:**

- a. Petroleum products such as gasoline should be handled with care due to its combustible properties. Avoid skin contact. Refer to Material Safety Data Sheet (MSDS).
- b. Cadets who are qualified Survival Instructor may assist with this instruction.

**EO C490.01**

1. **Performance:** Describe Climatic and Seasonal Concerns
2. **Conditions:**
  - a. Given:
    - (1) Supervision, and
    - (2) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Training area large enough to accommodate the entire group.
3. **Standard:** The cadet shall describe climatic and seasonal concerns that affect a survival situation.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Describe: <ol style="list-style-type: none"> <li>a. climate associated with the following regions:               <ol style="list-style-type: none"> <li>(1) the West Coast,</li> <li>(2) the Prairies,</li> <li>(3) the Great Lakes–St. Lawrence,</li> <li>(4) Atlantic Canada, and</li> <li>(5) the North; and</li> </ol> </li> <li>b. climate change, to include:               <ol style="list-style-type: none"> <li>(1) environmental impact, and</li> <li>(2) health impact.</li> </ol> </li> </ol>	Interactive Lecture	15 min	C3-341 C3-342 C3-343
TP2	Conduct a group discussion on seasonal concerns in a survival situation, to include: <ol style="list-style-type: none"> <li>a. spring,</li> <li>b. summer,</li> <li>c. autumn, and</li> <li>d. winter.</li> </ol>	Group Discussion	10 min	C3-344

5. **Time:**
  - a. Introduction / Conclusion: 5 min
  - b. Interactive Lecture: 15 min
  - c. Group Discussion: 10 min
  - d. Total: 30 min

6. **Substantiation:**

- a. An interactive lecture was chosen for TP 1 to give an overview of climate concerns.
- b. A group discussion was chosen for TP 2 as it allows the cadets to interact with their peers and share knowledge, experiences, opinions, and feelings about seasonal concerns associated with spring, summer, autumn, and winter weather. This helps develop rapport by allowing the instructor to evaluate the cadets' responses in a non-threatening way while helping them refine their ideas. A group discussion also helps the cadets improve their listening skills and develop as members of a team.

7. **References:**

- a. C3-341 Environment Canada.(2009). *Environmental impacts*. Retrieved April 16, 2009, from <http://www.ec.gc.ca/cc/default.asp?lang=En&n=4630D154-1>
- b. C3-342 Environment Canada. (2009). *Health impacts*. Retrieved April 16, 2009, from <http://www.ec.gc.ca/cc/default.asp?lang=En&n=0B072979-1>
- c. C3-343 O Canada. (2009). *Canadian regional climate*. Retrieved April 16, 2009, from <http://www.ocanada.ca/climate/regional.php>
- d. C3-344 Government of Canada. (2008). *Four seasons*. Retrieved April 22, 2009, from <http://www.goingtocanada.gc.ca/CIC/display-afficher.do?id=0000000000039&lang=eng>

8. **Training Aids:** Nil.

9. **Learning Aids:** Nil.

10. **Test Details:** Nil.

11. **Remarks:** Cadets who are qualified Survival Instructor may assist with this instruction.



**EO C490.02**

1. **Performance:** Improvise Tools for Use in a Survival Situation
2. **Conditions:**
  - a. Given:
    - (1) Aviation salvage kit,
    - (2) Bones,
    - (3) Cordage,
    - (4) Knife,
    - (5) Needle,
    - (6) Supervision, and
    - (7) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Training area large enough to accommodate the entire group.
3. **Standard:** The cadet shall improvise tools for use in a survival situation, to include:
  - a. cutting tools, and
  - b. a compass.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Discuss the potential of the materials at hand for use in a survival situation.	Group Discussion	10 min	A3-016 (p. 150)
TP2	Explain, demonstrate and have the cadets construct a cutting or piercing tool, to include: <ol style="list-style-type: none"> <li>a. a bone, metal or plastic knife, or</li> <li>b. a bone needle.</li> </ol>	Demonstration and Performance	15 min	
TP3	Explain, demonstrate and have the cadets construct a compass.	Demonstration and Performance	15 min	
TP4	Explain and demonstrate how to construct a hammer.	Demonstration	10 min	

5. **Time:**

- |    |                                |        |
|----|--------------------------------|--------|
| a. | Introduction / Conclusion:     | 10 min |
| b. | Group Discussion:              | 10 min |
| c. | Demonstration and Performance: | 30 min |
| d. | Demonstration:                 | 10 min |
| e. | Total:                         | 60 min |

6. **Substantiation:**

- a. A group discussion was chosen for TP 1 to allow the cadets to interact with their peers and share knowledge and experiences about the potential of the materials at hand during a survival situation.
- b. A demonstration and performance was chosen for TPs 2 and 3 as it allows the instructor to explain and demonstrate the skill of improvising tools while providing an opportunity for the cadets to practice the skill under supervision.
- c. A demonstration was chosen for TP 4 to allow cadets to observe how to construct a hammer.

7. **References:** A3-016 B-GA-217-001/PT-001 Director Air Operations and Training. (1978). *Down but not out*. Ottawa, ON: Department of National Defence.

8. **Training Aids:**

- a. Bones,
- b. Cordage,
- c. Knife, and
- d. Needle.

9. **Learning Aids:**

- a. Bones,
- b. Cordage,
- c. Knife, and
- d. Needle.

10. **Test Details:** Nil.

11. **Remarks:** Cadets who are qualified Survival Instructor may assist with this instruction.

**EO C490.03**

1. **Performance:** Move a Casualty to Shelter
2. **Conditions:**
  - a. Given:
    - (1) Wooden poles (approximately 3 m long),
    - (2) Shirts / coats,
    - (3) Blanket,
    - (4) Tarp,
    - (5) Cordage,
    - (6) Supervision, and
    - (7) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Training area large enough to accommodate the entire group.
3. **Standard:** The cadet shall:
  - a. assess the situation; and
  - b. move a casualty to shelter using:
    - (1) a rescue carry, and
    - (2) an improvised stretcher.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Conduct an activity where the cadets will practice Emergency Scene Management (ESM), to include: <ol style="list-style-type: none"> <li>a. scene survey, to include:               <ol style="list-style-type: none"> <li>(1) taking charge of the situation;</li> <li>(2) calling out for help, to attract bystanders;</li> <li>(3) assessing the hazards and making the area safe;</li> <li>(4) finding out the history of the scene, number of casualties and mechanism(s) of injury;</li> <li>(5) identifying yourself and obtaining consent;</li> </ol> </li> </ol>	Practical Activity	15 min	A0-134 (pp. 1-11 to 1-15)

TP	Description	Method	Time	Refs
	<ul style="list-style-type: none"> <li>(6) assessing the responsiveness of casualty; and</li> <li>(7) getting medical help;</li> <li>b. primary survey, to include:               <ul style="list-style-type: none"> <li>(1) checking the airway;</li> <li>(2) checking for breathing; and</li> <li>(3) checking circulation;</li> </ul> </li> <li>c. secondary survey, to include:               <ul style="list-style-type: none"> <li>(1) obtaining a history of the casualty;</li> <li>(2) assessing the vital signs of the casualty;</li> <li>(3) performing a head to toe examination of the casualty; and</li> <li>(4) giving first aid to the casualty; and</li> </ul> </li> <li>d. ongoing casualty care, to include:               <ul style="list-style-type: none"> <li>(1) giving first aid for shock;</li> <li>(2) monitoring the casualty's condition;</li> <li>(3) recording the events of the situation; and</li> <li>(4) reporting on what happened.</li> </ul> </li> </ul>			
TP2	<p>Explain, demonstrate and have the cadets, in pairs / groups of three, move a casualty to shelter, to include:</p> <ul style="list-style-type: none"> <li>a. moving and carrying over short distances using:               <ul style="list-style-type: none"> <li>(1) drags,</li> <li>(2) the tarp drag method,</li> <li>(3) single-rescue carries, to include:                   <ul style="list-style-type: none"> <li>(a) packstrap carry,</li> <li>(b) piggyback carry, and</li> <li>(c) carrying seat; and</li> </ul> </li> </ul> </li> <li>b. carrying over long distances using the following two-person carries:               <ul style="list-style-type: none"> <li>(1) the fore-and-aft lift and carry, and</li> <li>(2) two-hand seat.</li> </ul> </li> </ul>	Demonstration and Performance	20 min	C2-030 (pp. 18–30)

TP	Description	Method	Time	Refs
TP3	Explain, demonstrate and have the cadets, as members of a group, fabricate an improvised stretcher, to include: <ol style="list-style-type: none"> <li>inventorying the available resources;</li> <li>fabricating the improvised stretcher; and</li> <li>testing the durability of the stretcher before use.</li> </ol>	Demonstration and Performance	30 min	C2-030 (pp. 30–33)
TP4	Discuss casualty care, to include: <ol style="list-style-type: none"> <li>focusing on:               <ol style="list-style-type: none"> <li>breathing,</li> <li>warmth,</li> <li>body's position (eg, recovery, comfortable),</li> <li>morale,</li> <li>rest,</li> <li>fluid intake,</li> <li>urination, and</li> </ol> </li> <li>recording all observations.</li> </ol>	Interactive Lecture	15 min	C2-030 (pp. 52–69)

5. **Time:**

- |    |                                |        |
|----|--------------------------------|--------|
| a. | Introduction / Conclusion:     | 10 min |
| b. | Practical Activity:            | 15 min |
| c. | Demonstration and Performance: | 50 min |
| d. | Interactive Lecture:           | 15 min |
| e. | Total:                         | 90 min |

6. **Substantiation:**

- A practical activity was chosen for TP 1 as it is an interactive way to allow cadets to experience emergency scene management skills in a safe, controlled environment. This activity contributes to the development of first aid skills and knowledge in a fun and challenging setting.
- A demonstration and performance was chosen for TPs 2 and 3 as it allows the instructor to explain and demonstrate moving a casualty to shelter and fabricating an improvised stretcher while providing an opportunity for the cadets to practice and develop these skills under supervision.
- An interactive lecture was chosen for TP 4 to introduce the cadets to assessing the situation and caring for a casualty.

7. **References:**

- A0-134 A-MD-050-072/PW-001 Canadian Forces (2006). *Military first aid: Safety oriented: basic and standard Levels: Activity book*. Ottawa: Department of National Defence.

- b. C2-030 ISBN 0-7710-8250-9 Merry, W. (1994). *St. John Ambulance: The official wilderness first aid guide*. Toronto, ON: McClelland & Stewart Inc.

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area,
- b. Wooden poles (approximately 3 m long),
- c. Shirts / coats,
- d. Blanket,
- e. Tarp, and
- f. Cordage.

9. **Learning Aids:**

- a. Wooden poles (approximately 3 m long),
- b. Shirts / coats,
- c. Blanket,
- d. Tarp, and
- e. Cordage.

10. **Test Details:** Nil.

11. **Remarks:**

- a. Cadets who are qualified Survival Instructor or qualified first-aiders in Proficiency Level Four may assist in the conduct of this EO.
- b. The assessment of the casualty in order to move the casualty will be conducted by the qualified first-aider.
- c. Samples of improvised stretchers should be fabricated before conducting this lesson to use as examples.

**EO C490.04**

1. **Performance:** Practice Safe Toolcraft
2. **Conditions:**
  - a. Given:
    - (1) Axe,
    - (2) Bow saw,
    - (3) Shovel,
    - (4) Knife,
    - (5) Honing stone,
    - (6) Sharpening stone,
    - (7) Cloth,
    - (8) Supervision, and
    - (9) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Field setting.
3. **Standard:** The cadet shall practice safe toolcraft while in the field, when using:
  - a. an axe,
  - b. a bow saw,
  - c. a shovel, and
  - d. a knife.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Explain, demonstrate and have the cadets: <ol style="list-style-type: none"> <li>a. handle tools;</li> <li>b. pass tools; and</li> <li>c. store tools.</li> </ol>	Demonstration and Performance	25 min	C3-003 (pp. 171–174)
TP2	Explain, demonstrate and have the cadets: <ol style="list-style-type: none"> <li>a. clean and sharpen a knife; and</li> <li>b. file and sharpen an axe.</li> </ol>	Demonstration And Performance	20 min	C3-002 (p. 35) C3-003 (p. 25)

TP	Description	Method	Time	Refs
TP3	Explain, demonstrate and have the cadets cut wood using: a. an axe; and b. a bow saw.	Demonstration and Performance	20 min	C3-002 (p. 306) C3-003 (pp. 171–174)
TP4	Explain, demonstrate and have the cadets use a shovel, to include: a. digging a hole; and b. filling a hole.	Demonstration and Performance	15 min	

5. **Time:**

- a. Introduction / Conclusion: 10 min
- b. Demonstration and Performance: 80 min
- c. Total: 90 min

6. **Substantiation:** A demonstration and performance was chosen for this lesson as it allows the instructor to explain and demonstrate the skills. The cadets are expected to sharpen a knife and an axe, and to cut wood while providing an opportunity for the cadets to practice the skills under supervision.

7. **References:**

- a. C3-002 ISBN 0-00-653140-7 Wiseman, J. (1999). *The SAS survival handbook*. Hammersmith, London: HarperCollins Publishers.
- b. C3-003 ISBN 1-896713-00-9 Tawrell, P. (1996). *Camping and wilderness survival: The ultimate outdoors book*. Green Valley, ON: Falcon Distribution.

8. **Training Aids:**

- a. Vice or clamp,
- b. Axe,
- c. Bow saw,
- d. Shovel,
- e. Knife,
- f. Honing stone,
- g. Sharpening stone,
- h. Cloth, and
- i. First aid kit.

9. **Learning Aids:**

- a. Vice or clamp,
- b. Axe,



- c. Bow saw,
- d. Shovel,
- e. Knife,
- f. Honing stone,
- g. Sharpening stone, and
- h. Cloth.

10. **Test Details:** Nil.

11. **Remarks:**

- a. Sharpening should only be done under close supervision of trained staff members, to prevent unnecessary damage to the equipment and injury to cadets.
- b. Cadets who are qualified Survival Instructor may assist with this instruction.

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**EO C490.05**

1. **Performance:** Navigate a Route Using a Map and Compass
2. **Conditions:**
  - a. Given:
    - (1) Calculator,
    - (2) Compass,
    - (3) Paper,
    - (4) Pen / pencil,
    - (5) Predetermined declination,
    - (6) Topographical maps (including one of the training area),
    - (7) Supervision, and
    - (8) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Field setting or training area large enough to accommodate the entire group.
3. **Standard:** The cadet shall navigate a six-leg predetermined route no longer than two kilometres, using a map and compass.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Review the compass, to include: <ol style="list-style-type: none"> <li>a. the principles behind the workings of a compass,</li> <li>b. the parts of the compass,</li> <li>c. magnetic declination, and</li> <li>d. how to set a predetermined declination.</li> </ol>	Practical Activity	10 min	A2-036 (pp. 5-29 to 5-31) A2-041 (pp. 66–68)
TP2	Review topographical maps, to include: <ol style="list-style-type: none"> <li>a. marginal information, and</li> <li>b. conventional signs.</li> </ol>	Practical Activity	10 min	A2-041 (pp. 7–13, pp. 19–26)
TP3	Conduct an activity to have the cadets review grid references (GRs), to include: <ol style="list-style-type: none"> <li>a. four-figure GRs,</li> <li>b. constructing a romer, and</li> <li>c. six-figure GRs.</li> </ol>	Practical Activity	20 min	A2-041 (pp. 37–41)

TP	Description	Method	Time	Refs
TP4	Conduct an activity to have the cadets review: <ol style="list-style-type: none"> <li>determining distance on a map, to include:               <ol style="list-style-type: none"> <li>measuring point-to-point; and</li> <li>measuring along a route between two points; and</li> </ol> </li> <li>determining bearings on a map, to include:               <ol style="list-style-type: none"> <li>the 16 points of a compass,</li> <li>the degree system,</li> <li>the three norths, and</li> <li>types of bearings.</li> </ol> </li> </ol>	Practical Activity	20 min	A2-041 (pp. 16–18, pp. 47–51, pp. 68–70) C2-041 (p. 50)
TP5	Conduct an activity to have the cadets review: <ol style="list-style-type: none"> <li>determining distance on the ground, to include:               <ol style="list-style-type: none"> <li>determining personal pace; and</li> <li>identifying factors that affect pace; and</li> </ol> </li> <li>determining bearings on the ground.</li> </ol>	Practical Activity	20 min	A2-041 (pp. 68–70) C0-111 (p. 530, p. 531) C2-041 (p. 106)
TP6	Have the cadets navigate a route using a map and compass.	Practical Activity	30 min	

5. **Time:**

- |    |                            |         |
|----|----------------------------|---------|
| a. | Introduction / Conclusion: | 10 min  |
| b. | Practical Activity:        | 110 min |
| c. | Total:                     | 120 min |

6. **Substantiation:** A practical activity was chosen for this lesson as it is an interactive way for the cadets to review the compass, topographical maps, GRs, distance on the map and on the ground, bearings on the map and on the ground, and to navigate a route using a map and compass in a safe and controlled environment. This activity contributes to the development of navigation skills and knowledge in a fun and challenging setting.

7. **References:**

- A2-036 A-CR-CCP-121/PT-001 Director Cadets 3. (2003). *Royal Canadian army cadet reference book*. Ottawa, ON: Department of National Defence.
- A2-041 B-GL-382-005/PT-001 Directorate of Army Doctrine 8. (2006). *Maps, field sketching, compasses and the global positioning system*. Ottawa, ON: Department of National Defence.
- C0-111 ISBN 978-0-9740820-2-8 Tawrell, P. (2006). *Camping and wilderness survival: The ultimate outdoors book* (2nd ed.). Lebanon, NH: Author.
- C2-041 ISBN 978-0-07-136110-3 Seidman, D., & Cleveland, P. (1995). *The essential wilderness navigator*. Camden, ME: Ragged Mountain Press.

8. **Training Aids:**

- a. Presentation aids (eg, whiteboard / flip chart / OHP / multimedia projector) appropriate for the classroom / training area,
- b. Calculator,
- c. Compass,
- d. Constructed romer,
- e. Paper,
- f. Pen / pencil,
- g. Protractor, and
- h. Topographical maps (including one of the training area).

9. **Learning Aids:**

- a. Calculator,
- b. Compass,
- c. Paper,
- d. Pen / pencil,
- e. Predetermined declination, and
- f. Topographical maps (including one of the training area).

10. **Test Details:** Nil.

11. **Remarks:**

- a. TPs 1–5 are taught by learning stations. Divide the cadets into four groups and have the groups rotate between four learning stations: one station for TPs 1 and 2 and one station each for TPs 3–5.
- b. To preserve and reuse the maps, they should be covered or coated with mac tac to allow the use of dry-erase markers instead of pencils or pens.
- c. Assistant instructors and cadets who are qualified Survival Instructor may assist with this instruction.

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**EO C490.06**

1. **Performance:** Erect, Tear Down and Pack Tents
2. **Conditions:**
  - a. Given:
    - (1) 5- or 10-person arctic tent,
    - (2) Civilian-pattern tent,
    - (3) Modular tent, to include:
      - (a) two centre sections,
      - (b) one front,
      - (c) one rear,
      - (d) three "A" frames,
      - (e) six purlins, and
      - (f) six steel pegs;
    - (4) Mallet,
    - (5) Shovel,
    - (6) Supervision, and
    - (7) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Field setting during the day.
3. **Standard:** The cadet, as a member of a group, shall erect, tear down and pack tents.
4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Discuss site selection, to include: <ol style="list-style-type: none"> <li>a. requiring access by vehicle for set-up and equipment transport;</li> <li>b. inspecting the area for the following:               <ol style="list-style-type: none"> <li>(1) proximity to a water source that provides potable water and food from fishing;</li> <li>(2) proximity to a fuel source for fire during cold weather;</li> <li>(3) proximity to building materials;</li> <li>(4) proximity to animal trails or holes;</li> </ol> </li> </ol>	Interactive Lecture	10 min	A3-059 (p.1-5, p. 1-8, pp. 2-1 to 2-20)

TP	Description	Method	Time	Refs
	<ul style="list-style-type: none"> <li>(5) an area that can be seen from aircraft above; and</li> <li>(6) an entrance that is sheltered from the wind and preferably in the direction of the sun; and</li> <li>c. placing tents away from the cooking area.</li> </ul>			
TP2	<p>Explain, demonstrate and have the cadets, as members of a group, erect, tear down and pack a two-section modular tent with walls, to include:</p> <ul style="list-style-type: none"> <li>a. identifying components of a modular tent;</li> <li>b. identifying tent sections, to include:               <ul style="list-style-type: none"> <li>(1) centre section,</li> <li>(2) front wall, and</li> <li>(3) rear wall;</li> </ul> </li> <li>c. discussing tent maintenance;</li> <li>d. erecting by:               <ul style="list-style-type: none"> <li>(1) laying out and connecting the frame;</li> <li>(2) locking the frame;</li> <li>(3) connecting tent sections;</li> <li>(4) raising the side and placing canvas; and</li> <li>(5) anchoring;</li> </ul> </li> <li>e. tearing down by:               <ul style="list-style-type: none"> <li>(1) loosening the cables and ground anchors;</li> <li>(2) removing material from the sod cloth;</li> <li>(3) releasing all straps and lacing up to the eave purlins;</li> <li>(4) lowering the tent one side at a time;</li> <li>(5) unlacing tent walls and sections and removing from frame; and</li> <li>(6) dismantling the frame (reverse procedure); and</li> </ul> </li> <li>f. packing by:               <ul style="list-style-type: none"> <li>(1) laying out the canvas with the outer surface facing the ground, for ease of cleaning;</li> </ul> </li> </ul>	Demonstration and Performance	70 min	A3-059 (p. 1-5, p. 1-8, p. 2-1 to 2-20)



TP	Description	Method	Time	Refs
	<ul style="list-style-type: none"> <li>(2) folding front and rear walls by:               <ul style="list-style-type: none"> <li>(a) bringing the peak and sides of the wall toward the centre to square off the wall;</li> <li>(b) bringing the ends of the walls to the centre of the wall;</li> <li>(c) folding the wall in half; and</li> <li>(d) folding the opposite way to complete the process; and</li> </ul> </li> <li>(3) folding the centre section by:               <ul style="list-style-type: none"> <li>(a) taking the ends of the section and placing them in the centre of the section;</li> <li>(b) taking one end and folding it across to the other end;</li> <li>(c) taking the section and folding it into thirds;</li> <li>(d) folding the section in half; and</li> <li>(e) folding the section in half in the opposite direction.</li> </ul> </li> </ul>			
TP3	<p>Explain, demonstrate and have the cadets, as members of a group, erect, tear down and pack one of the following types of tents:</p> <ul style="list-style-type: none"> <li>a. a 5- or 10-person arctic tent, to include:               <ul style="list-style-type: none"> <li>(1) identifying components of a 5- or 10-person arctic tent, and</li> <li>(2) inspecting an arctic tent; or</li> </ul> </li> <li>b. a civilian-pattern dome tent, to include:               <ul style="list-style-type: none"> <li>(1) selecting a civilian-pattern dome tent, based on:                   <ul style="list-style-type: none"> <li>(a) seasons and conditions,</li> <li>(b) weight, and</li> <li>(c) features; and</li> </ul> </li> <li>(2) maintaining the tent, to include:                   <ul style="list-style-type: none"> <li>(a) protecting the tent;</li> <li>(b) lighting the tent;</li> <li>(c) not eating in the tent; and</li> <li>(d) cleaning the tent.</li> </ul> </li> </ul> </li> </ul>	Demonstration and Performance	30 min	A3-060 (pp. 3-11 to 3-25)

5. **Time:**

- |    |                                |         |
|----|--------------------------------|---------|
| a. | Introduction / Conclusion:     | 10 min  |
| b. | Interactive Lecture:           | 10 min  |
| c. | Demonstration and Performance: | 100 min |
| d. | Total:                         | 120 min |

6. **Substantiation:**

- a. An interactive lecture was chosen for TP 1 to give direction on factors to consider when selecting a site.
- b. A demonstration and performance was chosen for TPs 2 and 3 as it allows the instructor to explain and demonstrate erecting, tearing down and packing tents while providing an opportunity for the cadets to practice the skills under supervision.

7. **References:**

- a. A3-059 C-87-110-000/MS-000 Canadian Forces. (1983). *Operational support and maintenance manual: Tent, main*. Ottawa, ON: Department of National Defence.
- b. A3-060 B-GG-302-002/FP-001 Canadian Forces. (1974). *Arctic and sub-arctic operations: Part 1*. Ottawa, ON: Department of National Defence.

8. **Training Aids:**

- a. Modular tent,
- b. 5- or 10-person arctic tent,
- c. Civilian-pattern dome tent,
- d. Mallet, and
- e. Shovel.

9. **Learning Aids:**

- a. Modular tent,
- b. 5- or 10-person arctic tent or civilian-pattern dome tent,
- c. Mallet, and
- d. Shovel.

10. **Test Details:** Nil.

11. **Remarks:**

- a. If the squadron does not have access to modular tents, have the cadets erect, tear down and pack the arctic tent and the civilian-pattern tent.
- b. Cadets who are qualified Survival Instructor may assist with this instruction.

**EO C490.07**

1. **Performance:** Construct a Hootchie or Lean-to-Style Shelter
2. **Conditions:**
  - a. Given:
    - (1) Groundsheet,
    - (2) Cordage,
    - (3) Knife,
    - (4) Supervision, and
    - (5) Assistance as required.
  - b. Denied: Nil.
  - c. Environmental: Overnight aircrew survival exercise.
3. **Standard:** The cadet shall:
  - a. select an improvised shelter site; and
  - b. construct a hootchie or lean-to-style shelter.
4. **Teaching Points:**
  - a. Brief the cadets prior to the activity, to include an explanation of:
    - (1) the objectives and importance of the activity;
    - (2) the resources that may be required to perform the activity; and
    - (3) any safety guidelines that must be followed while participating in the activity.
  - b. Have the cadets select an improvised shelter site.
  - c. Have the cadets construct a hootchie or lean-to-style shelter.
5. **Time:**
  - a. Introduction / Conclusion: 10 min
  - b. Practical Activity: 80 min
  - c. Total: 90 min
6. **Substantiation:** A practical activity was chosen for this lesson as it allows the cadets to practice aircrew survival skills in a safe and controlled environment. This activity contributes to the development of aircrew survival skills and knowledge in a fun and challenging way.
7. **References:** Nil.
8. **Training Aids:** Nil.

9. **Learning Aids:**

- a. Groundsheet,
- b. Cordage, and
- c. Knife.

10. **Test Details:** Nil.

11. **Remarks:**

- a. Cadets are encouraged to sleep overnight during the aircrew survival exercise in the improvised shelter. The squadron staff will decide whether or not the cadets will sleep overnight in the improvised shelter using the principles of due diligence and safety considerations.
- b. Cadets who are qualified Survival Instructor may assist with this instruction.
- c. There is no instructional guide for this EO.

## INSTRUCTIONAL METHODOLOGIES AND THEIR APPLICATIONS

The various methods of instruction commonly accepted as appropriate for cadet training is outlined below.

METHOD	DEVELOPMENTAL PERIOD ONE AGES 12 – 14 EXPERIENCE-BASED	DEVELOPMENTAL PERIOD TWO AGES 15 – 16 DEVELOPMENTAL	DEVELOPMENTAL PERIOD THREE AGES 17 – 18 COMPETENCY
Behaviour Modeling	Not applicable	Not applicable	Applicable
Case Study	Not applicable	Applicable	Applicable
Demonstration and Performance	Applicable	Applicable	Applicable
Experiential Learning	Applicable	Applicable	Applicable
Field Trip	Applicable	Applicable	Applicable
Game	Applicable	Applicable	Applicable
Group Discussion	Applicable	Applicable	Applicable
Guided Discussion	Not applicable	Not applicable	Applicable
In-class Activity	Applicable	Applicable	Applicable
Interactive Lecture	Applicable	Applicable	Applicable
Lecture	Applicable	Applicable	Applicable
On-the job Training (OJT)	Not applicable	Not applicable	Applicable
Peer Learning	Not applicable	Not applicable	Applicable
Practical Activity	Applicable	Applicable	Applicable
Problem-based Learning	Not applicable	Applicable	Applicable
Role Play	Not applicable	Applicable	Applicable
Self-Study	Not applicable	Not applicable	Applicable
Seminar Method	Not applicable	Applicable	Applicable
Simulation	Not applicable	Not applicable	Applicable
Tutorial	Not applicable	Not applicable	Applicable

General information follows on each method for its age-appropriateness, definition, application, advantages and disadvantages.

METHOD(S)	APPLICATIONS	ADVANTAGES	DISADVANTAGES
<p><b>CASE STUDY</b> Cadets are given a written problem, situation or scenario, to which they respond either individually or as a group in order to achieve a performance objective. The problem situation or scenario should match the experience level of the cadets and they should be given enough time either before or during the instructional period to analyze it. Responses to the case should be recorded under four headings: Facts, Assumptions, Problems and Solutions</p>	<ol style="list-style-type: none"> <li>Learning principles, attitudes and concepts.</li> </ol>	<ol style="list-style-type: none"> <li>Effective application of teaching principles instead of “preaching”.</li> <li>Cadets can help each other learn.</li> <li>High energy and perfect demonstrations.</li> <li>Can be easily related to a real life situation in the past and for future applications.</li> </ol>	<ol style="list-style-type: none"> <li>Must be well organized and facilitated in order to ensure learning takes place.</li> </ol>
<p><b>DEMONSTRATION AND PERFORMANCE</b> Cadets observe the instructor performing the task in a demonstration, and rehearse it under the supervision of the instructor. A good example of this is drill instruction, where cadets are shown a movement and given the opportunity to practice and perform it.</p> <p><b>Demonstration Method</b> A method of instruction where the instructor, by actually performing an operation or doing a job, shows the cadet what to do, how to do it and through explanations brings out why, where and when it is done.</p> <p><b>Performance Method</b> A method in which the cadet is required to perform, under controlled conditions, the operations, skill or movement being taught.</p>	<p><b>Demonstration Method</b></p> <ol style="list-style-type: none"> <li>To teach manipulative hands-on operations or procedures.</li> <li>To teach troubleshooting.</li> <li>To illustrate principles.</li> <li>To teach operation or functioning of equipment.</li> <li>To teach teamwork.</li> <li>To set standards of workmanship.</li> <li>To teach safety procedures.</li> </ol> <p><b>Performance Method</b></p> <ol style="list-style-type: none"> <li>To teach manipulative hands-on operations or procedures.</li> <li>To teach operations or functioning of equipment.</li> <li>To teach team skills.</li> <li>To teach safety procedures.</li> </ol>	<p><b>Demonstration Method</b></p> <ol style="list-style-type: none"> <li>Minimizes damage and waste.</li> <li>Saves time.</li> <li>Can be presented to large groups.</li> </ol> <p><b>Performance Method</b></p> <ol style="list-style-type: none"> <li>Builds confidence.</li> <li>Enables learning evaluation.</li> <li>Reduces damage and waste.</li> <li>Promotes safety.</li> </ol>	<p><b>Demonstration Method</b></p> <ol style="list-style-type: none"> <li>Requires careful preparation and rehearsal.</li> <li>Requires special classroom arrangements.</li> <li>Requires equipment and aids.</li> </ol> <p><b>Performance Method</b></p> <ol style="list-style-type: none"> <li>Requires tools and equipment.</li> <li>Requires large blocks of time.</li> <li>Requires more instructors.</li> </ol>

METHOD(S)	APPLICATIONS	ADVANTAGES	DISADVANTAGES
<p><b>EXPERIENTIAL LEARNING</b> Learning in the cadet program is centred on experiential learning. This involves learning knowledge and skills from direct experience. People learn best from their own experiences and can then apply the knowledge and skills in new situations. The four stages of the cycle may be considered and applied to all activities within the Cadet Program, regardless of methodology chosen.</p> <p><b>Stage 1: Concrete Experience:</b> Cadets have an experience and take time to identify and define what the experience is. Sample activities: direct observations, simulations, field trips, and reading.</p> <p><b>Stage 2: Reflective Observation:</b> Cadets need to reflect on and examine what they saw, felt and thought while they were having the experience. Sample activities: discussion, journals / logs, and graphs.</p> <p><b>Stage 3: Abstract Conceptualization:</b> Cadets work to understand and make connections from the experience to new or different situations. Sample activities: interview, discussion, model building, analogies and planning.</p> <p><b>Stage 4: Active Experimentation:</b> Cadets look ahead to and plan the application of skills and knowledge acquired to future experience. Sample activities include: simulation, fieldwork.</p> <p>Note: The cycle is ongoing as each learning experience builds on another.</p>	<ol style="list-style-type: none"> <li>1. To teach practical skills.</li> <li>2. To learn how to learn.</li> <li>3. To teach transferable skills.</li> <li>4. To teach the process or principle.</li> <li>5. To teach problem solving.</li> </ol>	<ol style="list-style-type: none"> <li>1. Knowledge is shared and created by everyone.</li> <li>2. Everyone is actively involved in the teaching – learning process.</li> <li>3. Numerous resources are used.</li> <li>4. Cadet based.</li> </ol>	<ol style="list-style-type: none"> <li>1. Many resources are required (may be expensive).</li> <li>2. Needs a lot of planning, preparation and organization prior to activity.</li> <li>3. The instructor must master the subject developed.</li> <li>4. Instructor needs very good pedagogical skills.</li> <li>5. May not be a good process for learning details.</li> </ol>
<p><b>FIELD TRIP</b> Theoretical knowledge is reinforced through participation in an activity in a real-life setting. Prior planning helps to ensure all pre-training and safety standards are met. Field trip activities are planned and carried out to achieve clear instructional objectives that are understood by the cadets. Examples can include trips to areas of local interest, flying / gliding, hiking or sailing.</p>	<ol style="list-style-type: none"> <li>1. Awareness of historical situations.</li> <li>2. Can be used in conjunction with many other instructional methods.</li> <li>3. To introduce / illustrate and confirm topics.</li> </ol>	<ol style="list-style-type: none"> <li>1. Immerse cadets in a specific environment.</li> </ol>	<ol style="list-style-type: none"> <li>1. May be difficult to control.</li> <li>2. Needs much organization and preparation.</li> <li>3. May have cost involved.</li> </ol>

METHOD(S)	APPLICATIONS	ADVANTAGES	DISADVANTAGES
<p><b>GAME</b> Games are used with one or more participants to practice skills, apply strategies and enhance teams. It is critical that the game supports learning through the provision of a challenging activity that allows for the skill practice or knowledge confirmation. Games are a fun and interesting way to introduce a topic, expand cadets' understanding knowledge of topic or review material.</p>	<ol style="list-style-type: none"> <li>1. Practical situations.</li> <li>2. Discovery of concepts and principles.</li> <li>3. Review and confirmation.</li> <li>4. Games include rules and assessment.</li> </ol>	<ol style="list-style-type: none"> <li>1. Fun, interesting.</li> <li>2. Creates ownership.</li> <li>3. Highly participative.</li> <li>4. Many resources involved.</li> </ol>	<ol style="list-style-type: none"> <li>1. May stratify the group by creating a winner and a loser.</li> <li>2. May be difficult to providing instructor feedback.</li> </ol>
<p><b>GROUP DISCUSSION</b> Cadets discuss issues, share knowledge, opinions and feelings about a topic in small groups to a specific goal. The instructor's questioning is flexible and minimal, and aims at encouraging cadets to explore their own experiences and opinions through peer interaction.</p>	<ol style="list-style-type: none"> <li>1. To develop imaginative solutions to problems.</li> <li>2. To stimulate thinking and interest and to secure cadet participation.</li> <li>3. To emphasize main teaching points.</li> <li>4. To supplement lectures.</li> <li>5. To determine how well cadets understand the concepts and principles.</li> <li>6. To prepare cadets for application of theory or procedure.</li> <li>7. To summarize, clarify points or review.</li> <li>8. To prepare cadets for instruction that will follow.</li> <li>9. To determine cadet progress and effectiveness of prior instruction.</li> </ol>	<ol style="list-style-type: none"> <li>1. Increases cadet interest.</li> <li>2. Increases cadet acceptance and commitment.</li> <li>3. Utilizes cadet knowledge and experience.</li> <li>4. Results in more permanent learning because of the high degree of cadet participation / cognitive involvement.</li> </ol>	<ol style="list-style-type: none"> <li>1. Requires highly skilled instructors.</li> <li>2. Required preparation by cadets.</li> <li>3. Limits contents.</li> <li>4. Consumes time.</li> <li>5. Restricts size of group.</li> <li>6. Requires selective group composition.</li> </ol>



METHOD(S)	APPLICATIONS	ADVANTAGES	DISADVANTAGES
<b>IN-CLASS ACTIVITY</b> In-class activities encompass a wide variety of activity-based learning opportunities that can be used to reinforce instructional topics or to introduce cadets to new experiences. In-class activities should provoke thought and stimulate interest among cadets, while maintaining relevance to the performance objectives. Examples of these activities include learning stations, videos, brainstorming / debating.	<ol style="list-style-type: none"> <li>1. To reinforce instructional topics.</li> <li>2. To orient cadets to the subject.</li> <li>3. To introduce a subject.</li> <li>4. To give direction on procedures.</li> <li>5. To present basic material.</li> <li>6. To introduce a demonstration, discussion or performance.</li> <li>7. To illustrate the application of rules, principles or concepts.</li> <li>8. To review, clarify, empathize or summarize.</li> </ol>	<ol style="list-style-type: none"> <li>1. To provoke thought and stimulate interest among cadets, while maintaining relevance to the performance objectives.</li> <li>2. Permits flexibility with class size.</li> <li>3. Requires less rigid space requirements.</li> <li>4. Permits adaptability.</li> <li>5. Permits versatility.</li> <li>6. Permits better control over content and sequence.</li> </ol>	<ol style="list-style-type: none"> <li>1. Encourages cadet passiveness.</li> <li>2. Difficult to gauge cadet reaction.</li> <li>3. Takes time to prepare.</li> </ol>
<b>INTERACTIVE LECTURE</b> The instructor-driven methodology combines both lecture and interaction to meet lesson objectives. Lecture portions of the lesson are offset with relevant activities such as videos with discussion, games to confirm and completion of handouts.	<ol style="list-style-type: none"> <li>1. To orient cadets to the subject.</li> <li>2. To introduce a subject.</li> <li>3. To give instruction on procedures.</li> <li>4. To present basic material.</li> <li>5. To illustrate the application of rules, principles or concepts.</li> <li>6. To review, clarify, empathize or summarize.</li> </ol>	<ol style="list-style-type: none"> <li>1. Saves time.</li> <li>2. Permits flexibility of class size.</li> <li>3. Requires less rigid space requirements.</li> <li>4. Permits adaptability.</li> <li>5. Permits versatility.</li> <li>6. Permits better control over content and sequence.</li> </ol>	<ol style="list-style-type: none"> <li>1. Involves one-way communication.</li> <li>2. Poses problems in skill teaching.</li> <li>3. Encourages passive behaviour.</li> <li>4. Difficult to gauge cadet reaction.</li> <li>5. Requires highly skilled instructors.</li> <li>6. Requires a high level of concentration from the cadets.</li> </ol>
<b>LECTURE</b> This is a formal or semi-formal discourse in which the instructor presents a series of events, facts, principles, explores a problem or explains relationships.	<ol style="list-style-type: none"> <li>1. To orient cadets to the subject.</li> <li>2. To introduce a subject.</li> <li>3. To give instruction on procedures.</li> <li>4. To present basic material.</li> <li>5. To illustrate the application of rules, principles or concepts.</li> <li>6. To review, clarify, empathize or summarize.</li> </ol>	<ol style="list-style-type: none"> <li>1. Proficient oral skills are required.</li> <li>2. Useful for big groups.</li> <li>3. Saves time because of fewer interruptions.</li> </ol>	<ol style="list-style-type: none"> <li>1. Should have a clear introduction and conclusion.</li> <li>2. Cadets may be passive and uninvolved.</li> </ol>

METHOD(S)	APPLICATIONS	ADVANTAGES	DISADVANTAGES
<b>PRACTICAL ACTIVITY</b> Practical activities encompass a wide variety of activity-based learning opportunities that can be used to reinforce and practice instructional topics or to introduce cadets to new experiences. Practical activities should stimulate interest among cadets and encourage their participation, while maintaining relevance to the performance objectives.	<ol style="list-style-type: none"> <li>1. Review.</li> <li>2. In practical situations such as leadership development, parade appointments, etc.</li> <li>3. To introduce a subject.</li> </ol>	<ol style="list-style-type: none"> <li>1. Encourage participation by cadets.</li> <li>2. Stimulate interest in the subject.</li> <li>3. Maintain relevance to the performance objectives.</li> <li>4. Fun and interesting.</li> <li>5. Creates ownership.</li> <li>6. Highly participative in small groups.</li> <li>7. Many resources involved.</li> </ol>	<ol style="list-style-type: none"> <li>1. Extensive supervision is required to ensure proper content is covered.</li> <li>2. Takes time to prepare.</li> <li>3. Not suitable for large groups.</li> </ol>
<b>PROBLEM-BASED LEARNING</b> Cadets analyse a problem, apply the steps in the problem solving method and work toward solving the problem in small groups. Problem-based learning requires cadets to participate and interact with each other while developing critical thinking skills. Instructors choose problem that stimulate thought, reinforce learning and relate to the cadets' interest and needs. Throughout the exercise, instructors pose thought-provoking questions and guide cadets without influencing their decisions.	<ol style="list-style-type: none"> <li>1. Review.</li> <li>2. In practical situations such as leadership development, parade appointments, etc.</li> </ol>	<ol style="list-style-type: none"> <li>1. Encourage participation by cadets.</li> <li>2. Stimulate interest in the subject.</li> <li>3. Maintain relevance to the performance objectives.</li> <li>4. Many resources involved.</li> </ol>	<ol style="list-style-type: none"> <li>1. Critical thinking skills are required.</li> <li>2. Broad knowledge of the subject matter is required.</li> </ol>
<b>ROLE PLAY</b> Cadets are assigned roles requiring them to interact with others in responding to various realistic situations. The instructor identifies the purpose of the role-play, provides the cadets with enough background information to help them accurately play their assigned role, and motivates them to become more fully involved in the activity. De-brief after the role-play is essential to connect the activity with the PO / EO.	<ol style="list-style-type: none"> <li>1. Skills associated with social systems or human interactions; practical situations eg. Positive Social Relations for Youth, discipline issues, behaviour on the range, leadership, instructional techniques.</li> <li>2. Attitudinal objectives.</li> </ol>	<ol style="list-style-type: none"> <li>1. High participation, interactive delivery and may lead to discussions.</li> <li>2. Experience is developed in a supportive environment.</li> <li>3. Can be very versatile depending on application eg, introduce a topic, mid-stage learning or as confirmation.</li> </ol>	<ol style="list-style-type: none"> <li>1. Participants can be easily sidetracked, need for good preparation and controls must be set appropriately.</li> <li>2. Competence, experience and prepared instructors required.</li> </ol>