CAPP 60-41

CADET CYBER & STEM RECOGNITION PROGRAMS

August 2018

Part 1

INTRODUCTION

Extrinsic awards are key motivators for the cadet age group. When an educational program is coupled with a meaningful incentive, cadets see a reason to pursue learning goals. Incentive or recognition programs encourage cadets to participate in areas where they might not otherwise get involved. To promote cadet learning in STEM, CAP offers two recognition opportunities: the Cadet Cyber Badge and the Cadet STEM Badge.

1.1 Regulatory Guidance

The Cadet Cyber and STEM Badges are authorized for wear on the CAP cadet uniform, effective 1 October 2018. See CAPM 39-1, *CAP Uniform Manual.* This pamphlet outlines the eligibility rules for cadets participating in this elective program. The program does not serve senior members.

1.2 Process for Requesting & Approving Badge Awards

Cadets complete the requirements on the following pages to become eligible for the Cadet Cyber Badge or Cadet STEM Badge. In the case of the Cadet STEM Badge, the cadet records participation in STEM activities via a log that the unit AEO validates (see 3.4)

When the cadet believes he or she has fulfilled all requirements, a CAPF 2a is completed to request the badge at the appropriate rating. The unit AEO (or cyber officer, if available, in the case of the cyber badge), verifies that the cadet has fulfilled all requirements and endorses the form as the requestor. The badge is awarded upon approval by the unit commander.

1.3 The Badges' Modular Format

Both the Cadet Cyber Badge and Cadet STEM Badge use a modular format. Recipients obtain a single, basic badge, and affix the appropriate star to denote their level of achievement. A blue star indicates the Basic rating, a silver star indicates the Intermediate rating, and a gold star indicates the Advanced rating. As cadets earn ratings, they may remove the old star and install the new, while keeping the same basic badge.

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Part 2

CADET CYBER BADGE

2.1 Purpose: Encourage cadet participation in CAP's cyber education programs

Figure 1.

2.2 Design: The Cadet Cyber Badge (Figure 1) follows in the tradition of the Air Forces Cyber organizational emblem (Figure 2). It includes a globe to suggest the worldwide reach of the cyber domain. The two gold lightning bolts at the base of the CAP triangle represent computer science and national defense, while the intertwined pair of bolts atop the triangle represents excellence and the future. The badge's black field represents the cyber domain's hidden nature. Read as a single, visual text, the iconography proclaims that cadets are developing their scientific knowledge in a field vital to the national defense, thereby contributing to an excellent future for themselves and their nation.

Figure 2.

2.3 *Award Criteria*

BASIC CADET CYBER BADGE

1. Complete Achievement 1 of the CAP Cadet Program, the Curry Achievement.

2. Complete the activities set forth in the *CAP Introduction to Cyber Security Activity Guide*. This involves classroom and hands-on activities comprising approximately 20 contact hours. The modules are designed as a squadron-level project for weekly meetings and one or two weekend days.

3. Participate in the CyberPatriot competition. This involves classroom and hands-on activities of approximately 20 contact hours.

4. Career Dossier. Research and write about a cyber-related occupation (civilian, government, or military). A sample dossier is included in Part 4. Submit the 1 to 2 page dossier to the unit AEO or cyber education officer for review and a brief follow-on discussion.

2.4 *Award Criteria*
INTERMEDIATE CADET CYBER BADGE

1. Earn the Basic Cadet Cyber Badge.

2. Complete Phase I of the CAP Cadet Program and earn the Wright Brothers Award.

3. Participate in the CyberPatriot competition, serving in a team leadership role. This involves classroom and hands-on activities of approximately 20 contact hours.

4. Successfully complete the Cyber Defense Training Academy, Cyberspace Familiarization Course.

5. Career Dossier. Complete another 1 to 2 page dossier, this time on a different occupation, following the same guidelines as used for the Basic Cadet Cyber Badge.

2.5 *Award Criteria*
ADVANCED CADET CYBER BADGE

1. Earn the Intermediate Cadet Cyber Badge.

2. Complete Phase II of the CAP Cadet Program and earn the Mitchell Award.

2. Serve a minimum of 30 (cumulative) contact hours as a tutor, assistant coach, or instructor for a CyberPatriot team or during activities associated with a squadron's completion of the *CAP Introduction to Cyber Security Activity Guide*. Alternatively, complete the Cyber Defense Training Academy, Advanced Cyberspace Familiarization Course.

4. Complete a high school (or higher) course in computer science, information assurance, or cyber security. Alternatively, obtain an industry-standard information security certification such as the CompTIA Security +, or $(ISC)^2$ SSCP - Systems Security Certified Practitioner.

5. Provide at least ten hours' IT service to CAP or another organization by managing a website, local access network, or unit help desk. Alternatively, design an application, administer Moodle courseware or other learning management system, or complete a project of similar scope and complexity.

Part 3

CADET STEM BADGE

3.1 Purpose: Encourage cadet participation in CAP's non-cyber, non-rocketry STEM learning programs.

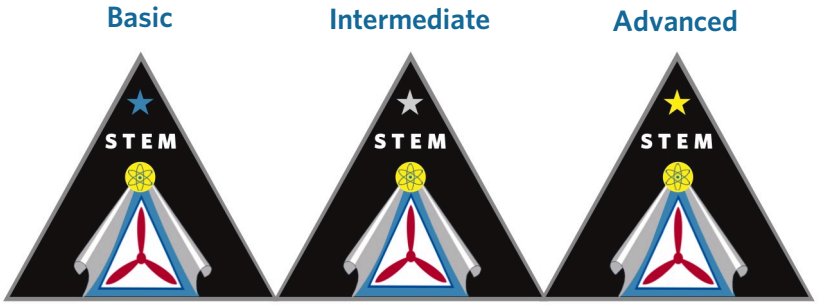

Figure 3.

3.2 Design: The Cadet STEM Badge (Figure 3) follows in the tradition of the Air Force Research Laboratory's organizational emblem (Figure 4). It depicts the CAP triangle emblem cutting through the unknown, represented by a black field. The triangle emblem is aimed upward, suggesting progress, toward an atomic icon, representing the physical sciences that are STEM's domain. The atomic icon's blue signifies the Air Force and aerospace themes in the CAP STEM curriculum, while the icon's gold color represents excellence. Read as a single, visual text, the iconography proclaims that cadets are exploring cutting-edge technologies that advance human knowledge, ultimately leading to personal and scientific excellence.

Figure 4.

3.3 Eligible Activities

CAP promotes STEM education through several activity programs and the portfolio of opportunities is always growing. Astronomy, robotics, model aircraft, flight simulators, satellites, remote sensors, hydraulics, meteorology, and AEX activities are just some of the thematic areas available to cadets. See GoCivilAirPatrol.com/AE for more information.

For the purposes of the Cadet STEM Badge, all aerospace activity programs offered by CAP/AE for grades 6-12 are eligible to fulfill the badge's requirements, ***except*** cyber defense and rocketry activities, as those thematic areas are recognized with the Cadet Cyber Badge and the Model Rocketry Badge, respectively.

3.4. Cadet Log

To earn the Cadet STEM Badge, cadets must maintain a log and complete at least 12 hours' participation in eligible STEM activities. The unit AEO validates the cadet's log. For a suggested log in Excel format, see GoCivilAirPatrol.com/STEMlog. Sections 3.5, 3.6, and 3.7 below list further award criteria.

3.5 *Award Criteria*
BASIC CADET STEM BADGE

1. Complete Achievement 3 of the CAP Cadet Program, the Feik Achievement. This results in the cadet completing two modules in the *Aerospace Dimensions* series.

2. Participate in at least 12 hours of eligible STEM activities (see 3.3 above). The 12 hours' participation may be in a single thematic area or multiple areas. Provide the unit AEO with a log of these accomplishments. For a suggested log in Excel format, see GoCivilAirPatrol.com/STEMlog.

3. Career Dossier. Research and write about a STEM-related occupation (civilian, government, or military). A sample dossier is included in Part 4. Submit the 1- to 2-page dossier to the unit AEO for review and a brief follow-on discussion.

3.6 *Award Criteria*
INTERMEDIATE CADET STEM BADGE

1. Earn the Basic Cadet STEM Badge.

2. Complete Achievement 5 of the CAP Cadet Program, the Lindbergh Achievement. This results in the cadet completing four modules in the *Aerospace Dimensions* series.

3. Participate in 12 hours of eligible STEM activities, beyond what was completed for the previous badge. Alternatively, complete an additional 9 hours of eligible STEM activities as a student and complete 3 hours as a tutor or assistant instructor on STEM activities previously completed. See 3.3 above for eligible STEM activities.

4. Career Dossier. Complete a 1- to 2-page dossier, this time on a different occupation, following the same guidelines as used for the Basic Cadet STEM Badge.

3.7 *Award Criteria*
ADVANCED CADET STEM BADGE

1. Earn the Intermediate Cadet STEM Badge.

2. Earn the Mitchell Award. This results in the cadet passing a comprehensive exam of *Aerospace Dimensions.*

3. Participate in 12 hours of eligible STEM activities, beyond what was completed for the previous badges. Alternatively, complete an additional 6 hours of eligible STEM activities as a student and complete an additional 6 hours as a tutor or assistant instructor on STEM activities previously completed. See 3.3 above for eligible STEM activities.

4. As a community service, lead a group of non-cadet youth in any STEM-related hands-on activity of 30 minutes' duration or longer.

5. Career Dossier. Complete a 1- to 2-page dossier on yet another occupation, following the same guidelines as used for the Basic Cadet STEM Badge.

Part 4

SAMPLE CAREER DOSSIER

Write in complete sentences. Use correct grammar. Proofread for spelling and typos.

Best place to start?
Search the web for "[occupation] professional association." Other good sources for career information include corporate, military, and U.S. Department of Labor websites.

Cadet John Curry
CAPID: 123456
Intermediate Cadet Stem Badge
1 December 1941

Include this key info (name, CAPID, etc.) and format the title as shown.

CAREER DOSSIER
Occupation: Meteorologist

Found a good definition online; quoted it and credited the source.

1. Synopsis of Job. What does a meteorologist do? A meteorologist is "an individual with specialized education who uses scientific principles to observe, understand, explain, or forecast phenomena in Earth's atmosphere and/or how the atmosphere affects Earth and life on the planet." (ametsec.org)

2. Impact of the Profession. How do meteorologists make a difference in the world? Put simply, people rely on meteorologists to forecast the weather. Ordinary people want to know if the weekend will be sunny. Pilots need detailed forecasts of the weather at their departure and arrival airports and in the airspace between them. Farmers use meteorological data to monitor droughts, frosts, and other conditions. And, in a very real way, meteorologists save lives by providing advance warning of severe weather.

3. Typical Employers: National Weather Service, the US military, and local and national media

4. Educational Qualifications: A bachelor's degree in Meteorology or Atmospheric Sciences is required for a career outside the military. High school graduates with strong math and science skills can enlist in the military as weather observers.

5. Other Special Pre-Requisites & Certifications: Meteorologists who want to do live, on-air work typically obtain a minor in broadcast journalism or television production in addition to a meteorological degree.

In the Air Force, Special Operations Weather Technicians "collect and analyze meteorological and environmental data to coordinate missions and deploy assets. Imbedding with other special operations units in remote areas around the world, these experts use both highly advanced tools and intimate indigenous knowledge to keep our forces safe and one step ahead of the enemy." (airforce.com)

6. Professional Association: American Meteorological Society, ametsoc.org. Student memberships are available.

Found via a web search

7. Code of Ethics: Yes. The code has about ten sections that are too detailed to list here. Briefly, AMS members must uphold ethical standards in their relationships to (1) the profession as a whole, (2) their colleagues, and (3) the public or their clients. A recurring theme in the code of ethics is that meteorologists must base their practice on sound scientific principles and stay current in their scientific knowledge.

If the code of ethics had been only a paragraph long, it could have been reproduced in its entirety here; instead, a summary is given.

Time Estimate:
Most cadets should finish their dossier in 45 to 60 minutes.

Page Format:
margins: 1" all sides
font: 10-12 point
line spacing: single or 1.15

Content:
Use the 12 numbered, boldface headings shown here and on the next page.

Citations:
Every time a quotation is used or a statistic that is not common knowledge is given, a citation is provided For simplicity, just cite the webpage used.

Found via a web search; the Bureau of Labor Statistics is a good source of info.

8. Starting Salary: Unknown, but median pay for civilian meteorologists in 2017 was $92,000. Median household income in the US is $59,000. (bls.gov)

9. Job Outlook: Over the next ten years, the demand for meteorologists is expected to grow 12%, faster than most other occupations. (bls.gov)

10. Student Preparation: Because this is a scientific profession, it's imperative for students to excel in advanced mathematics and courses in physical science to prepare for college. Even if a student plans to enlist in the military, the meteorology career field is open only to servicemembers who score high on the ASVAB (Armed Services Vocational Aptitude Battery). In the Air Force, ASVAB scores of G55 and E50 are required. (military.com)

11. Personal Reflection: I first became interested in meteorology when we visited the meteorology office at Pease ANGB during encampment. Shortly afterward, our squadron completed activities using the CAP meteorology stem kit. I'm very good at math and also interested in computer science, so when I heard that most of the world's supercomputing power is used for weather forecasting, that was yet another reason to look into meteorology as a potential career. Still, because I'm interested in serving in the Air Force, I looked into opportunities in Air Force weather and learned about elite special operations weather technicians. That may be an interesting way to serve my country, get started in meteorology, earn money for college, and be part of the "tip of the spear" when America needs to send people into harm's way.

12. References:

AirForce.com, "Air Force Special Ops," https://www.airforce.com/careers/featured-careers/

American Meteorological Society, https://www.ametsoc.org/index.cfm/ams/

Bureau of Labor Statistics, "Occupational Employment Projections," https://www.bls.gov/emp/data/occupational-data.htm

Military.com, "ASVAB and Air Force Jobs," https://www.military.com/join-armed-forces/asvab/asvab-and-air-force-jobs.html

Student Preparation:
This section may require some interpretative skill; given what you now know about the career field, how should a student prepare for the career if he or she is interested in it?

References:
Each website referenced in the dossier is listed here, in alphabetical order.

Great job!
Amelia Earhart
Capt, CAP
Squadron AEO

Endorsement:
The unit AEO reviews the dossier, approves it, and files it in the cadet's personnel record.

EVALUATOR'S CHECKLIST

Grant the cadet credit if the dossier:

- ☐ is 1 to 2 pages in length;
- ☐ thoughtfully addresses at least 10 of the example's 12 standard sections;
- ☐ is based on reputable sources of career information such as a professional association, corporation, military service, or the U.S. Department of Labor; and
- ☐ uses complete sentences, proper grammar, and is free of spelling errors and typos.

If necessary, provide constructive feedback and ask the cadet to make edits and resubmit.

Finally, of course you're encouraged to begin a mentoring conversation with the cadet about his or her career aspirations. The dossier is intended as a jumping-off point.