



STEM in Civil Air Patrol



CIVIL AIR PATROL
U.S. AIR FORCE AUXILIARY



CIVIL AIR PATROL

AEROSPACE EDUCATION

HISTORY OF CIVIL AIR PATROL

Formed December 1, 1941, for civilian aviation purposes, Civil Air Patrol is a nonprofit, humanitarian organization chartered by Congress and is the official Auxiliary of the United States Air Force.

- 1942- Started the Cadet Program
- 1946- Incorporated by Congress
- 1948- Became USAF Auxiliary
- 1953- Aerospace Ed in school systems
- Today- Outreach to the nation
 - * Leading K-12 youth and STEM organization in the nation

*****Has always had women at the forefront.
Continues to provide myriad aviation/STEM opportunities for diverse populations of male female youth across our country!**





CIVIL AIR PATROL
AEROSPACE EDUCATION

SPEAKER INTRODUCTION

- **Erik Wolbach**
 - Prior Service Army – 12 years
 - Operation Iraqi Freedom Veteran
 - U.S. Military Academy at West Point
 - B.S. Civil Engineering
 - Teaching 18 years.
 - M.S. Curriculum & Instruction
- **Civil Air Patrol Role**
 - CAP Member for 1.5 years
 - Captain Rank
 - Aerospace Education
 - Emergency Services





CIVIL AIR PATROL
AEROSPACE EDUCATION

CAP RELATIONSHIP TO AIR FORCE

- **U.S. Air Force Auxiliary**
 - We are not a branch of the military
 - No service commitment (all volunteer)
 - Not here to recruit kids into military
 - Adhere to Air Force regulations
 - Wear Air Force uniforms
- **Funding**
 - Aircraft
 - Vans
 - Emergency Services training
- **Air Force Opportunities**
 - Too many to list . . .





CIVIL AIR PATROL
AEROSPACE EDUCATION

ORGANIZATION STRUCTURE

- **National Headquarters**
 - Creates Training
 - CAP Policies
 - Oversight
- **Great Lakes Region**
 - WI, IL, IN, KY, MI, OH
- **Wisconsin Wing**
 - Command Policies
 - Specific training
 - Larger events
 - Resources





CIVIL AIR PATROL
AEROSPACE EDUCATION

ORGANIZATION STRUCTURE

- **Local Squadrons are the Lifeblood of CAP**
 - Conducts individual and small unit training
 - Weekly meetings (2-3 hours)
 - Weekend events (optional, 1 per quarter to be current)
 - Cadet Chain of Command
 - Senior Member program
 - Cadet taught classes
 - Color Guard
 - STEM Teams
 - Leadership Labs
 - Character Development
 - First Aid Training



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ORGANIZATION STRUCTURE

• **Southeast**

- WALCO Composite Squadron (Elkhorn)
- Milwaukee Composite Squadron 5
- Waukesha Composite Squadron
- Racine Senior Squadron

• **East Central**

- Timmerman Composite Squadron (Milwaukee)
- Ozaukee Composite Squadron
- West Bend Composite Squadron
- Sheboygan Composite Squadron
- 10th Senior Support Squadron (Milwaukee)
- 156th WISTAC Senior Flight



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ORGANIZATION STRUCTURE

- **Southwest**
 - 153rd Madison Composite Squadron
 - Green County Senior Flight
 - Col R. C. Jaye Memorial Composite Squadron (Watertown)
- **Northeast**
 - Door County Composite Squadron (Sturgeon Bay)
 - Brown County Senior Squadron (Green Bay)
 - Stevens Point Composite Squadron
 - Fox Cities Composite Squadron (Appleton)
 - Tri-County Composite Squadron (Menominee)
- **Northwest**
 - Rib Mountain Senior Squadron (Wausau)
 - Eagle River Composite Squadron
 - Eau Claire Composite Squadron
 - La Crosse Composite Squadron
 - R. I. Bong Senior Squadron (Superior)
 - Wild River Composite Squadron (Hayward)



CIVIL AIR PATROL

AEROSPACE EDUCATION

THREE MISSIONS

- **Cadet Programs**
 - Leadership Development
 - Character Development
 - Ages 12-21
 - Community Volunteer Service
- **Aerospace Education**
 - Cadet Program
 - Adult Program
 - Community Program
- **Emergency Services**
 - Search and Rescue
 - Government Assistance
 - First Aid and CPR





CIVIL AIR PATROL
AEROSPACE EDUCATION



CADET PROGRAMS

- **Mission Statement**

... transforms youth into dynamic Americans and aerospace leaders.

- **Curriculum**

- Leadership
- Aerospace
- Curriculum
- Character
- Fitness





CIVIL AIR PATROL





AEROSPACE EDUCATION












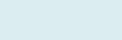
CADET PROGRAMS

- Ages 12-18 (19-21 program)
- First Four Rank Requirements
 - Leadership Open Book Test
 - Aerospace Dimensions Book
 - Fitness Test Participation
 - Character Development Class
 - Basic Drill Test

PHASE I

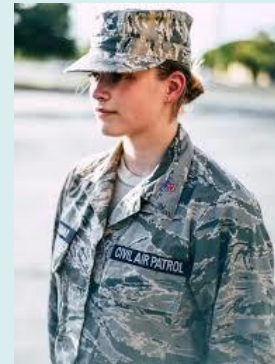
NEW CADETS START HERE	ACHIEVEMENT 1	ACHIEVEMENT 2	ACHIEVEMENT 3	WRIGHT BROS. AWARD
TRIAL PERIOD Prospective cadets must attend three meetings before the commander approves their membership application. Training begins right away using Cadet Great Start. The Cadet Welcome Course should be completed as soon as practical after joining. The New Cadet Kit arrives at the cadet's home about two weeks after joining.	 MAJOR GENERAL JOHN F. CURRY First National Commander of the Civil Air Patrol and a strong advocate for female aviators	 GENERAL OF THE AIR FORCE HAP ARNOLD Commanding general of U.S. Army Air Forces during World War II	 COLONEL MARY FEIK Pioneer in the fields of aviation mechanics and engineering, and proud CAP volunteer	 ORVILLE & WILBUR WRIGHT First men to achieve powered, controlled, sustained, heavier-than-air flight

GRADE, INSIGNIA, & AWARDS

CADET AIRMAN BASIC	CADET AIRMAN	CADET AIRMAN FIRST CLASS	CADET SENIOR AIRMAN	CADET STAFF SERGEANT
				
				

PROMOTION ELIGIBILITY REQUIREMENTS

LEADERSHIP	Learn to Lead ch. 1 Cadet Interactive or Open-Book Test	Learn to Lead ch. 2 Cadet Interactive or Open-Book Test	Learn to Lead ch. 3 Cadet Interactive or Open-Book Test	Learn to Lead ch. 1-3 Comprehensive Closed-Book Exam
	Drill & Ceremonies Performance Test	Drill & Ceremonies Performance Test	Drill & Ceremonies Performance Test	Comprehensive Drill & Ceremonies Performance Test
AEROSPACE	No Requirement	Aerospace Dimensions Any Module Cadet Interactive or Written Test	Aerospace Dimensions Any Module Cadet Interactive or Written Test	No Requirement
FITNESS	Attempt CPFT as a baseline	Participate in 1 Activity & Have Attempted CPFT in Previous 180 days	Participate in 1 Activity & Have Attempted CPFT in Previous 180 days	Participate in 1 Activity & Have Attained HFZ in Previous 180 days
CHARACTER	Cadet Wingman Course	Participate in 1 Activity	Participate in 1 Activity	No Requirement
SPECIAL	Cadet Welcome Course Cadet Interactive			





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AEROSPACE EDUCATION



SENIOR MEMBER PROGRAMS



- **Adult Members referred to as Senior Members**
 - All unpaid volunteers. You choose service times.
 - Age 18+, no military experience necessary
 - Military and Civilian Skills determine starting rank
 - Choose Specialty Track
 - CAP Training in Leadership and Specialty Track



CIVIL AIR PATROL
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EMERGENCY SERVICES

- **Search and Rescue**

- Downed or missing aircraft
- Missing persons

- **Provide Assistance**

- Air Force
- FAA
- FEMA
- Local civilian government



U.S. AIR FORCE



- **Adult Senior Member Roles**

- Ground Teams
- Aerial Teams (aircraft and drones)
- Command and Control

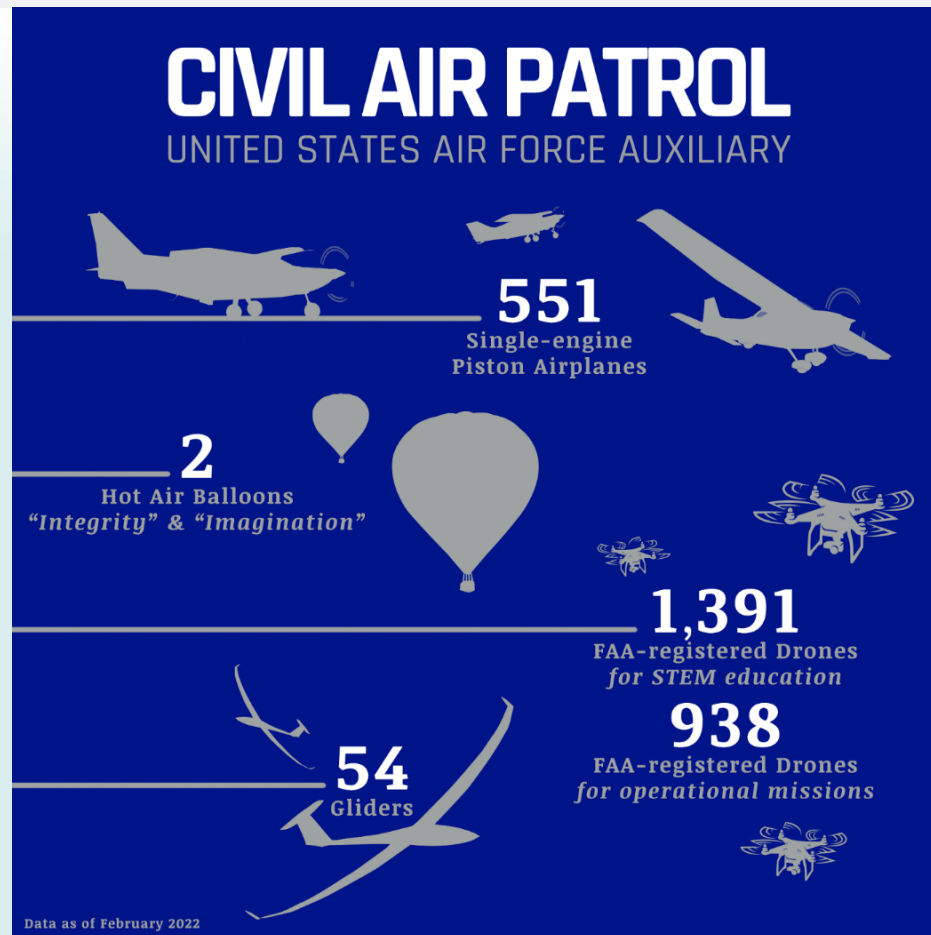




CIVIL AIR PATROL

AEROSPACE EDUCATION

AIRCRAFT





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AEROSPACE EDUCATION

- **CAP Aerospace Education Role:**
Empowering members with the opportunities and resources to promote aerospace-related STEM education and careers.
- **Internal Education**
 - Cadet Program
 - Senior Program
- **External Education**
 - School and Public Organization Programs
 - Aerospace Excellence Award
 - Free STEM Kits

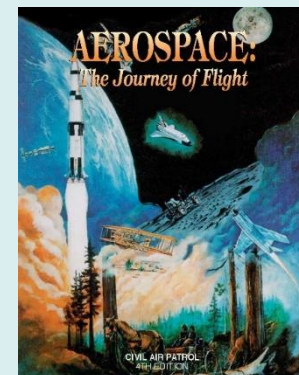
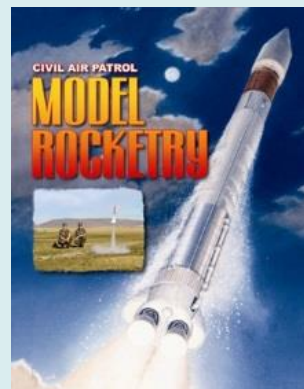
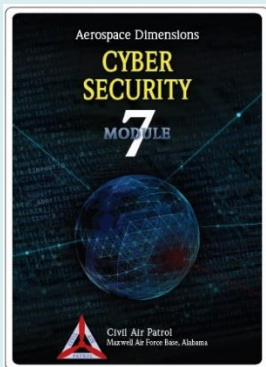
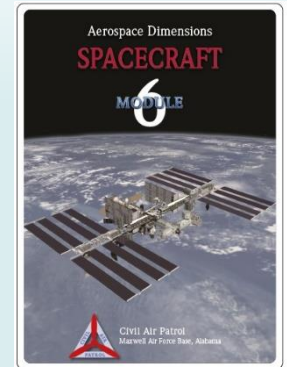
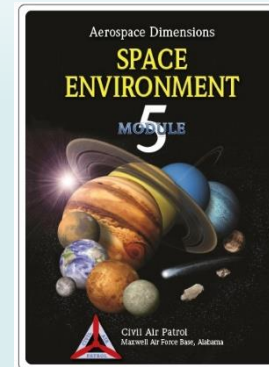
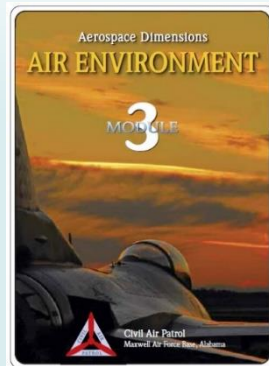
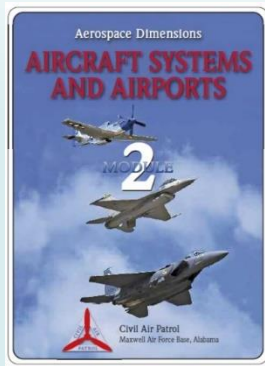
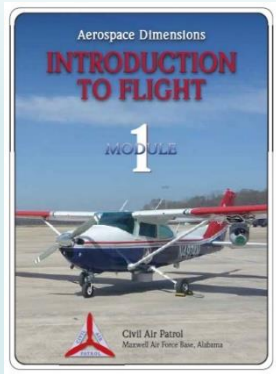


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AEROSPACE EDUCATION

AEROSPACE INTERNAL EDUCATION

Cadet curriculum products available to each cadet.





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INTERNAL AEROSPACE EDUCATION

Aerospace Education Weekend

- Held at Wittman Airport in Oshkosh
- Two Day overnight event focusing on STEM activities
- Hands on Projects
 - Rocketry Badge
 - sUAS Drones
 - Hot Air Balloons
 - Space Suit Design
 - Delta Dart
 - Egg Drop
 - STEM Badge Lab





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INTERNAL AEROSPACE EDUCATION

Adult instructors. Cadet Leaders.



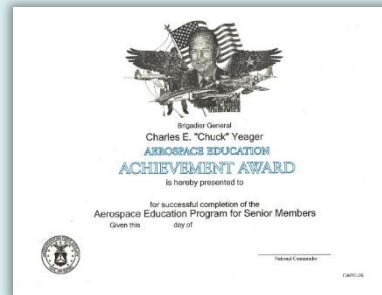
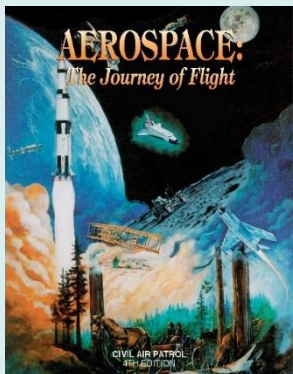


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INTERNAL AEROSPACE EDUCATION

Senior Member Program

- Instructors/Mentors
- Technician Rating with Professional Development
- Program Leaders at each unit level
- Yeager Award
- Unit Aerospace Education Officer
- National Aerospace Academy





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INTERNAL AEROSPACE EDUCATION

Summer Encampment

- Main purpose is cadet program goals.
- Aerospace is smaller part of encampment
 - Rocketry
 - Rifle Range
 - Aircraft Visits
 - F-16 Flyby
 - Navy E2 Hawkeye
 - KC-135 Refueling Plane
 - A-10 Attack Airplane





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INTERNAL AEROSPACE EDUCATION

Other Unique Opportunities

- Milwaukee Air Show Tours
 - Meet F-22 Demonstration Team
 - Meet Blue Angles Pilots, first female pilot
- EAA Annual Fly In
 - Track aircraft movements
 - Airport Security
 - Exposure to all facets of aviation
 - Tours of aircraft and pilot interviews
- Meet pilots from all branches
- Meet **astronaut** who could be the **first female** to land on the **moon!!!**





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INTERNAL AEROSPACE EDUCATION

Cadet Orientation Flights (O-Flights)

- Gives cadets the opportunity to experience the wonder of flight.
- Focus on basic maneuvers, aircraft instruments, etc.
- Eligible for five flights in a powered Cessna aircraft
- Cadets get to fly once in the air
- **Private Pilots License**
 - Much reduced rate due to CAP Scholarships
 - Training and flying time separate from normal events





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INTERNAL AEROSPACE EDUCATION

Cyber Patriot Competition

- Created by the Air and Space Forces Association to inspire K-12 students towards careers in cybersecurity.
- The nation's largest cyber defense competition that puts high school and middle school students in charge of securing virtual networks.
- Cadets spend three Saturdays training and two Saturdays competing.
- Applications based on Microsoft 11.
- Volunteer trainers in cybersecurity field always needed.



AIR FORCE ASSOCIATION'S

CYBERPATRIOT

THE NATIONAL YOUTH CYBER EDUCATION PROGRAM





CIVIL AIR PATROL
AEROSPACE EDUCATION

EXTERNAL AEROSPACE EDUCATION

www.gocivilairpatrol.com/programs/aerospace-education/for-educators

- **Aerospace Education Member (AEM)**
- **Teacher Orientation Program (TOP Flights)**
- **Free curriculum products**
- **Free K-12 STEM Kit Program**
- **K-6 Free Aerospace Connections in Education (ACE)**
- **CAP Squadron Support to Schools**

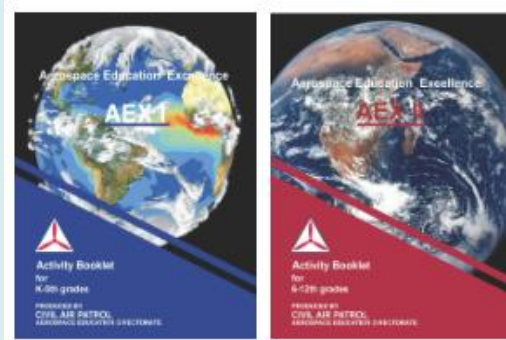


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EXTERNAL AEROSPACE EDUCATION

Aerospace Excellence Award (AEX)

- Complete six aerospace activities and one two-hour or longer field experience (space day; trip to the airport or museum, etc.) to earn an instructor certificate plus color certificates for the students.
- You may select activities from the AEX books provided by CAP, or you may use your own lessons.

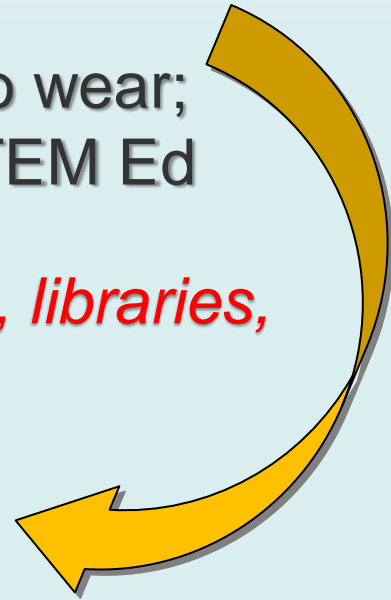




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AEROSPACE EDUCATION

EXTERNAL AEROSPACE EDUCATION

- ★ \$35 one-time membership fee; free annual renewal
- ★ Not a member of a CAP squadron; no uniform to wear; no meetings to attend; just inspire youth with STEM Ed
- ★ K-12 formal/informal educators eligible (*schools, libraries, museums, youth organizations, etc.*)
- ★ Enjoy all of the **FREE** AEM benefits (**to follow**)
- ★ Why? Help inspire youth toward STEM careers





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AEROSPACE EDUCATION

TEACHER ORIENTATION PROGRAM (TOP) FLIGHTS

- Fly in a CAP Cessna airplane
- Pre-flight briefing
- Fly over local area or school
- Handle the controls
- Bring experience back to students





CIVIL AIR PATROL

AEROSPACE EDUCATION

FREE EDUCATIONAL PRODUCTS

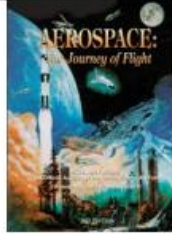
- Over 40 products – order in print and/or download from member portal.
- Aligned with Next Gen Science and National Academic Standards
- Pre K – grade 12





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AEROSPACE EDUCATION



Aerospace: The Journey of Flight
(With Teachers Guide)
Grades 9-College

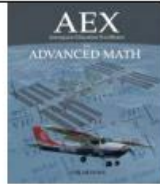


Aerospace Dimensions
(Six Modules & Teachers Guide)
Grades 6-9

Aerospace for the Very Young



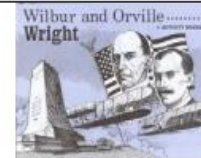
Aerospace for the Very Young
Grades K-3



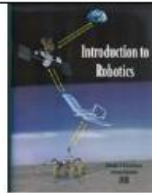
AEX- Advanced Aerospace Math
Grades 10-college



Wright Brothers Thematic Unit
Grades 4-9



Wright Brothers Activity Book
Grades K-3



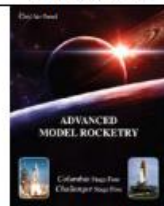
Robotics
Grades 6-12



Amelia Earhart Thematic Unit
Grades 4-9



Amelia Earhart Activity Book
Grades K-3



Advanced Model Rocketry
Grades 6-12



Model Rocketry
Grades 6-9

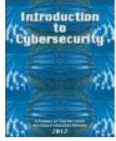
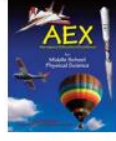






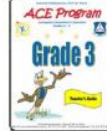




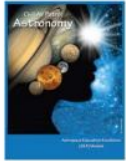


4 in 1 Activity Books
(Two books)
Grades K-3



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AEROSPACE EDUCATION

 <p>Introduction to Cybersecurity Grades 6-12</p>	 <p>AEX- Middle School Physical Science Grades 6-9</p>	 <p>Uncle Wiggly Wings (The Candy Bomber from WWI) Activity Book Grades K-3</p>
 <p>Model Aircraft & Remote Control (MARC) Grades 6-12</p>	 <p>AEX- Middle School Earth & Space Science Grades 6-9</p>	 <p>Fun in Flight- Aerospace Careers Grades K-3</p>
 <p>CAP-TERS CD CAP Teaching Educational Remote Sensing Grades 6-12</p>	 <p>AEX- Middle School Life Science Grades 6-9</p>	 <p>Aerospace Connections in Education (ACE) 7 Grade Level Curriculum Guides Grades K-6</p>
 <p>Aerospace Education Excellence (AEX) Volumes I, II & Adult Grades 6-12 & Adult</p>	 <p>International Space Station Thematic Unit Grades 6-9</p>	 <p>Aerospace Education Excellence (AEX) Volumes I & II Grades K-5</p>
 <p>Satellite Took Kit (STK) CD, Instructions, and Activities Grades 6-12</p>	 <p>Astronomy Module and Astronomy Activity Book Grades 5-12</p>	<p>Want to Know More?</p> <p>Contact ae@capnhq.gov</p>



CIVIL AIR PATROL
AEROSPACE EDUCATION

AEROSPACE EDUCATION VIDEO SERIES

www.youtube.com/c/RobertRoberts/videos



Space Stations CAP Aerospace Dimensions
Module 6 Chapter 3 Civil Air Patrol
487 views • 2 years ago



Manned Spacecraft CAP Aerospace
Dimensions Module 6 Chapter 2 Civil Air Patrol
527 views • 2 years ago



Unmanned Satellites - CAP Aerospace
Dimensions Module 6 Chapter 1 - Civil Air...
742 views • 2 years ago



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K-12 FREE STEM KITS

20+ FREE kits from which to select one-at-a-time to use, evaluate, and keep!



87% Increased STEM Career Interest



Free STEM Kit Program



Indoor Quadcopter



Robotics Workshop



Weather Station



Model & Remote Control Aircraft



Outdoor Quadcopter



Mechanics



Rocketry



Hydraulic Engineering



Flight Simulator



More Examples of Free STEM Kits

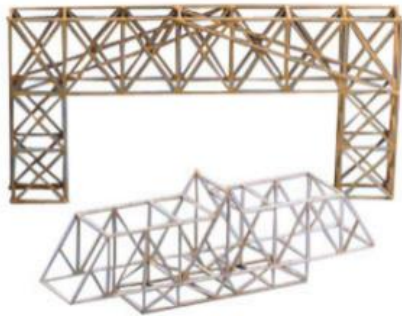


Snap Circuits Snaptricity

Raspberry Pi
Computer
Coding



Sphero Bolt
and Code Map



Bridge
Building



BeeBot/ Code
&Go Mouse

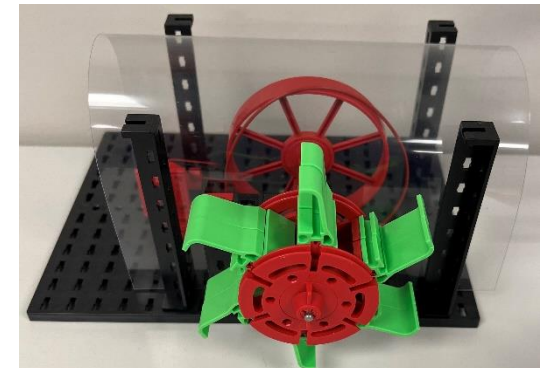


30 Days
Lost in Space

Astronomy



Renewable
Energy





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AEROSPACE EDUCATION

FREE K-6 GRADE ACE PROGRAM

- **Aerospace Connections in Education (ACE)**
 - Academics
 - Character Development
 - Physical Fitness
- 22 Lessons per grade level in curriculum guides. Must complete minimum of ten.
- Class set of grade level educational manipulatives.





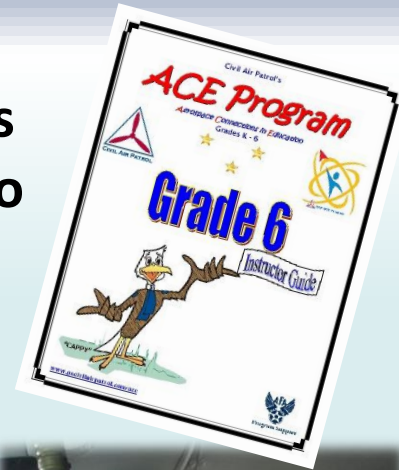
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AEROSPACE EDUCATION

AEROSPACE CONNECTIONS IN EDUCATION



Over half a million students across the nation inspired to pursue STEM careers. Can be expanded to K-8!





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AEROSPACE EDUCATION

AEROSPACE CONNECTIONS IN EDUCATION

Each ACE teacher receives a free class set of grade-specific aerospace educational items. Each ACE student gets one of these fun and engaging items to bring the study of space and flight to life!



Kindergarten
Earth balls

1st Grade
Balsa gliders



2nd Grade
Finger rockets

3rd Grade
Foam gliders



4th Grade
Rocket Planez™



5th Grade
Balsa planes
(powered by rubber bands)



6th Grade
Mini-rocket
footballs



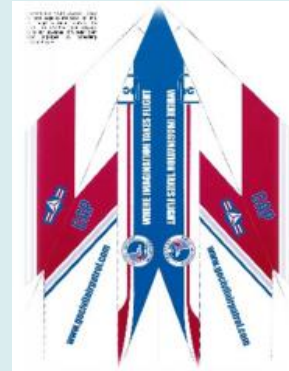
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AEROSPACE EDUCATION

AEROSPACE CONNECTIONS IN EDUCATION *PLUS+*

***ACE Plus* Program**

A Squadron Classroom Adoption Program

- Classrooms grades 5-6 get adopted by a local Civil Air Patrol Squadron.
- Grades 7-8 can use 6th grade curriculum.
- Waive one time membership fee.
- Squadron teaches minimum of three lessons.
 - Bernoulli bag, Rocket football, Balsa airplane, CAP paper airplanes.





CIVIL AIR PATROL

AEROSPACE EDUCATION

CAP SQUADRON SUPPORT TO AEMs

- Assist with program implantation.
- Provide teacher flights.
- Share cadets and cadet program.
- Classroom aerospace speakers.
- Arrange field trips to airports/museums.





CIVIL AIR PATROL

AEROSPACE EDUCATION

CADET PROGRAM CAREER EXPLORATION

- Aircraft Maintenance and Manufacturing
- Engineering Technology
- Space Command
- Meteorology
- ParaRescue
- Flight Training
- Cyber Security
- STEM Educator





Aerospace/STEM Education

CONTACT INFORMATION

- **Erik Wolbach**
 - erik.wolbach@wicap.us
- **Civil Air Patrol Aerospace Education Website**
 - www.gocivilairpatrol.com/programs/aerospace-education/for-educators
- **National Headquarters Email for Questions**
 - ae@capnhq.gov