



Civil Air Patrol - Arkansas Wing
Col. Robert Allison, Commanding
NASA Arkansas Space Grant Consortium
Dr. Keith Hudson, Director



Aerospace Education Grant Program
CALL FOR PROPOSALS

1. **Funding Amount:**

Up to \$250. Exact amount will be based on the individual grant proposal. Funding is provided by NASA's Arkansas Space Grant Consortium through Civil Air Patrol – Arkansas Wing to awardees.

2. **Eligibility:**

Aerospace Education Grants (AEGs) may be awarded to any Civil Air Patrol Aerospace Education Member or Squadron Aerospace Education Officer working with Arkansas youth in the K-12 age range. This may include: K-12 schools, home school networks, cooperatives, community colleges, universities, private businesses, corporations, Girl Scouts, Boy Scouts, 4-H, and Boys & Girls Club, etc. There will be 6 grants awarded to AEMs and 2 grants to CAP squadron AEOs.

***NOTE for AEOs- in this document and the application, use of the word “students” also means “cadets”.*

These funds will be awarded only for aerospace related topics/activities. While there is a broad range of allowable use of the grant funds (hands-on projects, classwork, etc.), preference is given to proposals utilizing the Project-Based Learning process (i.e. using a recognized PBL process such as Buck Institute model) and is highly preferred. STEM fields are given priority; however, proposals involving classrooms outside of the field of science will be considered. Extra consideration is provided for cross-curricular activities with two or more curricular areas working together on the activity.

Grant funding may also be used to train students for science fair projects (i.e. as in a classroom exercise), however, they may *not be used to directly fund students* (travel, stipend, etc.). If a student project is involved, the funding can be used to purchase supplies for the student to perform the activity/work.

The AEG award is not designed for teacher travel to professional development conferences and/or workshops. An exception to this policy would be, a professional development workshop directly sponsored by NASA or Civil Air Patrol, in which the teacher can demonstrate that such travel is an integral part of completing a specific activity with students. Requests will be considered on a case by case basis by the Civil Air Patrol Grant Board.

There are several areas where extra consideration may be given to certain criteria – however lack of those criteria does not disqualify an application – nor does it mean that it

will be rejected out-of-hand. A good idea is a GOOD idea, regardless of criteria checkboxes and the board will consider such things when deliberating proposals.

3. **Duration:**

Grants are to be used during the school year in which they are awarded. Applications will be accepted from **October 15th – March 30th**. Applications must be received by the last day of the month to be considered for award by the 15th of the following month. The deadline for final applications of the year is March 30th. All work must be completed by July 31st (unless written approval by DAE prior to grant application) and final reports **MUST** be uploaded by May 31st.

TIMELINES: One grant will be awarded per month as follows (except December):

AEM Grants:

December: (Applications due by 30 NOV) 2 grants will be awarded

January: (Applications due by 31 DEC)

February: (Applications due by 31 JAN)

March: (Applications due by 28/29 FEB)

April: (Applications due by 30 MAR)

AEO Grants:

December: (Application Due by 30 NOV)

March: (Application due by 28/29 FEB)

*** Award checks are mailed on or about the 15th of the award month, to the applicant's designated mailing address.

4. **Requirements:**

The application must be completed in full, contain all required and pertinent information concerning the use of the award, including: activity title, applicable Arkansas Frameworks, grade levels, time line and number of students involved. A detailed list of materials/items to be purchased, including where purchased, is also required.

Once a grant has been awarded, the recipient must give CAP brief updates regarding the activity every sixty days after grant award unless final report has been filed. A final report form (found on our website at <https://arwg.cap.gov/programs/aerospace-education>) must be completed within 30 days of activity completion, and without exception sent to CAP by the 31st of May of the school-year in which the funds were awarded. (AEOs are required to have final reports completed within 30 days of activity completion and no later than the 31st of July. Receipts using grant funds must be included in the final report.

The final report is an online form. Pictures, copies of receipts, etc. will need to be uploaded into the final report.

5. **Online Application:**

To apply for a grant, please complete the online application form, found at: <https://arwg.cap.gov/programs/aerospace-education>. Most questions are self-explanatory, however here are a few with further explanation:

- A. Organizational Supervisor Information: We request this for accountability purposes. However, if you do not have a supervisor, please state so under supervisor name.
- B. Compliance with Federal, NASA, and CAP grant rules: This is so we (Civil Air Patrol and NASA AR Space Grant) show that we let you know what the rules are for spending the federal grant money. If you have ANY question as to whether what you are doing may be against the rules, please contact Maj. St. Pierre. Chances are you won't be – but never hurts to double check.
- C. Type of Activity – On the form, there is listed “Project” and “Instructional unit using the Project-Based Learning process.” The difference between the two is: a “Project” is a product made as a result of instruction and “Instructional unit using the Project-Based Learning process” is where the PBL process is used throughout the entire instructional unit. *For more information about the PBL process, Arkansas Department of Education recommends the Buck Institute of Education PBL model: <https://www.pblworks.org/>* extra consideration will be given for PBL units.
- D. Learning Participants: Learning participants are those individuals that will be directly impacted by the activity to be performed. They can be students, and/or adults at a workshop, STEM event, etc. If you are using students to help 'staff' the activity and mentor learning participants include those as well. Do NOT count adults staffing event. **CAP AEOs: Senior Members only count if they are participating as part of a CAP Internal AE program (AEX event, etc).
- E. Underserved Minority Groups: Civil Air Patrol and NASA are seeking to provide opportunities to traditionally under-represented groups in the STEM field. If more than 51% of your primary learning participants comes from one or more of these groups, you qualify for extra consideration.
(ex. Out of 100 participants, 30 are African American, 15 are Hispanic, and 32 are female, you qualify for the 75%. You cannot count females twice. (Native American female – counts as 1, not 2))
- | | | |
|-----------------|------------------|------------------|
| Hispanic | Pacific Islander | African American |
| Native American | Women | |
- F. CAP AEX / ACE / STEM Kit programs: Extra consideration will be given to those proposals that utilize CAP resources and programs.
- G. Community Partners: NASA and CAP encourage community support. If you have outside organizations helping with this activity, please check “Yes” and provide information. Consideration will be given to proposals who have community support provided.
- H. Application Completion: If your application is not selected for funding in the month it was submitted, but you wish to have your application be considered in the next round of applications, click "Yes". If an application is not funded in two consecutive months, you will need to resubmit. This is not an option for the application month of April because no grants are awarded in May.

6. **Proposal:**

The application form will be completed online. A document (.doc or .pdf) will need to be created and submitted for your proposal. Documents should be typed and uploaded into the online application. Each of the following five categories should be addressed. *Proposals will not be accepted without each section being completed.*

- A. **Activity description:** Describe your activity in detail. *This does not need to be lengthy –two or three paragraphs at most.* Is it going to be a hands-on learning experience for the students, a true project-based learning unit, or some other type? How are the participants learning? How is this activity relevant to Civil Air Patrol and NASA missions? This section is to show you have a well thought out plan that will benefit students and stimulate learning.

(For relevancy reference):

Civil Air Patrol AE Mission: Title 36, United States Code § 40302 defines CAP's purposes as an organization to encourage and aid citizens of the United States in contributing their efforts, services, and resources in developing aviation and in maintaining air supremacy, to provide aviation education and training, and to promote Aerospace Education and cyberspace to citizens of the United States.

NASA Mission: (STEM Outreach) NASA seeks to:

- Create unique opportunities for students and the public to contribute to NASA's work in exploration and discovery.
- Build a diverse future STEM workforce by engaging students in authentic learning experiences with NASA people, content, and facilities.
- Strengthen public understanding by enabling powerful connections to NASA's mission and work.

- B. **Students involved and amount of participation:** List the number of learning participants that will be included. Describe the level and type of involvement the participants will have during the activity. We will request specific demographics for the students/teachers (participants/staff) involved in the activity for the final report.
- C. **New aerospace related materials you expect to incorporate into existing courses:** Describe the materials/ideas that will be introduced into your classroom or outreach program, and how it will be used to further the education of participants.
- D. **Arkansas Frameworks:** List each Arkansas Framework that will be address during the activity. Arkansas Frameworks can be found at:
<http://dese.ade.arkansas.gov/divisions/learning-services/curriculum-and-instruction>.
- E. **Detailed budget justification:** List each item that will be needed during the activity. This should include the approximate price of each item, as well as the place of purchase. Please be as specific as possible on the prices/places.

Examples of Allowable/Unallowable Expenses:

<u>Allowable</u>	<u>Unallowable</u>
Classroom Supplies (i.e. glue, scissors, paint)	General Office Supplies (i.e. pens, pencils, paper)
Books and Posters	Computers
Registration Fees	iPads
Rockets/Telescopes	Printers
Science Fair Training Supplies/Tools For Student Training	Reoccurring utilities (i.e. internet service)
Classroom Demonstrations	Furniture (i.e. desks, chairs, tables)
Software Programs	Buildings or Facility Enhancements
Bus/Van Rentals for Teacher Travel	Student Travel or Direct Compensation
Meals (only during overnight travel)	Food for an Event

*This is not a complete list. Please contact Civil Air Patrol – Maj. Garrick St. Pierre concerning specific items that you may need. Specific items that are normally considered not allowable may be allowable depending on use. *This is especially true regarding office supply type items.* For example, you cannot buy paper for the classroom, but you can buy paper to copy and make paper airplanes out of, or paper for documents directly related to your project, or etc.

7. Example Proposals:

There are 3 different types of example applications/proposals in the Appendices for your convenience. These include a STEM proposal (Appendix A), a project STEM proposal (Appendix B), and a traveling proposal (Appendix C). These are examples ONLY and not intended to be exact templates for proposal submission.

8. Correspondence:

Your AEG application will be considered received when you click “Submit” and you receive the confirmation email. The date / time stamp provided by the system will be the official time of submission.

We encourage questions during the application process. Questions can be asked by phone or Email to the contacts listed below.

Note: Civil Air Patrol is committed to providing full assistance for success from the beginning of the application process to the completion of the final report. All forms and documents can be found on our website: <https://arwg.cap.gov/programs/aerospace-education> the Aerospace Education webpage.

9. Contact Information for Arkansas Wing Civil Air Patrol:

Director of Aerospace Education

Major Garrick St. Pierre, CAP

gstpierre@cap.gov

501.803.6723 (C) – *preferred phone number*

501.376.1729 (Main Headquarters)

2201 Crisp St

Little Rock, AR 72202

Deputy Director of Aerospace Education

Captain Janice Podgurski, CAP

jpodgurski@cap.gov

479.420.8551 (C) – *preferred phone number*

501.376.1729 (Main Headquarters)

2201 Crisp St

Little Rock, AR 72202

Appendix A

Activity Description:

The Instructional Unit will last throughout the fall semester for one group of students and throughout the spring semester for the other group of students in order to allow the students to have time to thoroughly research their topic. We will be learning about the history of The Scientific Revolution. Each student will be assigned a different influential scientist from that time. They will then research the scientist, their ideas, inventions, and/or theories. Some examples of scientists that I intend to assign are Muhammed Al-Khwarizmi, Tycho Brache, Nicholas Copernicus, Galileo Galilei, Johannes Kepler, Isaac Newton, Claudius Ptolemy, and Zhang Heng. One assignment will be a research paper about the Scientific Revolution, how the assigned scientist was influential, and how we use their findings/ideas/inventions today.

I will be collaborating with the 8th Grade English teacher on this project. The participants will be learning the principles of research, proper sourcing and citing using the APA format, and finally how to write a research paper using the APA format. Use of the Arkansas Writing Rubric and the Science Research Paper Rubric from Sciencebuddies.com will be utilized. Both teachers will grade the research paper and two grades will be received for each class.

This project is relevant to CAP by encouraging students to learn about pre-industrial age aerospace research that later scientists based their work on developing aviation and space on. It is relevant to NASA by building a diverse student population's interest in what current-day NASA does to continue developing ground-breaking space research.

Student Involvement:

My entire 8th grade class will be included in the activity, 70 Students total in 3 different class periods. There are 43 males and 27 females. The students will have to do their own research regarding their assigned topic. We will set up a library type setting where the students will get to check out materials for their own individual research.

New Aerospace-Related Materials:

New books concerning the Scientific Revolution will be added to the classroom, as well as other material including posters and videos regarding the era that will continue to be used by future classes, and other departments within the school. We plan on having a few copies of each book to ensure ample resources are available for each student.

Arkansas Frameworks to be addressed:

History Standard 6: History- Grade 8 - H: 6 – 8 – 5: Identify major contributors of the Scientific Revolution.

Detailed Budget Justification:

Materials/Supplies:

Amount	Description:	Purchase Place:	Price
1	Poster - Galileo Moon Phases	Allposters.com	\$15.00
1	Poster – Kepler's Universe	Allposters.com	\$15.00
2	Computer Software: The Frontiers of Space	Rakuten.com	\$48.00
5	Book: The Structure of the Scientific Revolutions	Barnes and Noble	\$100.00

3	Book: Lost History: The Enduring Legacy of Muslim Scientist	Barnes and Noble	\$31.00
3	Book: Atlas of Science: Visualizing what we know	Barnes and Noble	\$29.00
		Total:	\$238.00

Appendix B

Activity Title: 5..4..3..2..1 We have Lift Off!

Activity Description:

In this Project-Based Learning Unit, students will be learning about rotation and speed while measuring the different RPMs of a helicopter during hovering, ascending, and descending. It is designed to help demonstrate to students why a helicopter can vertically lift off the ground. It allows them to explore what aerodynamic factors contribute to the helicopter's ability to do so. The activity will last over several different days in the classroom.

The activity will begin with learning the different parts and aspects of a helicopter. The demonstration will allow the students to measure the speed of rotation, and how it changes during movement of the helicopter. The students will be learning and using a digital tachometer to accurately measure the RPM. They will need to calculate the RPM depending on the different influences to the helicopter. A tape measure will be used to measure the distance the helicopter ascends or descends. The hover rate, the ascent rate, and descent rate of the helicopter will also be determined. Each demonstration will be repeated to ensure accuracy. The averages of the different rates will then be used to make a graph of the information. This exercise will then be repeated using different RPMs.

This activity is relevant to CAP's mission by engaging students in aviation education about one of the important components of General Aviation, rotary-wing craft. This will play an even larger role as the aviation industry seeks to expand drone usage. The activity is relevant to NASA's mission by having the students engage in NASA's Aeronautics Division – specifically sUAS research.

Student Involvement:

The class has a total of 15 students. There are 7 female and 8 male students. I anticipate the students completing the experiment with each other entirely. I want the students to measure the different aspects and calculate the correct corresponding rate. The point of this experiment is for the students to have hands-on experience with rates of motion.

New aerospace-related materials:

The remote-control helicopter will allow for many future activities for the students. The tachometer will give the students the opportunity to learn the mechanics of the machine, as well as the ability to take measurements of rotation.

Arkansas Frameworks:

Physics/Science Curriculum Framework

Grades: 9 - 12

Standard 1: students shall understand one-dimensional motion

Standard 2: students shall understand two-dimensional motion

Standard 3: students shall understand the dynamics of rotation equilibrium

Standard 16: students shall demonstrate an understanding that science is a way of knowing

Standard 17: students shall safely design and conduct a scientific inquiry to solve valid problems

Standard 18: students shall demonstrate an understanding of historical trends in physics

Standard 19: students shall use mathematics, science equipment, and technology as tools to communicate and solve physics problems

Detailed Budget Justification:

Materials/Supplies:

Amount:	Description:	Purchase Place:	Price (with tax):
1	Warbird 2 Radio Control Helicopter	Toys R Us	\$100.00
1	Neiko 20713A Digital Tachometer	Amazon	\$30.00
2	Taylor Digital Scale	Walmart	\$30.00
1	Sportslines 480 Stopwatch	Walmart	\$15.00
1	9-piece Hanging Weight Set	Sci-Supply.com	\$40.00
		Total:	\$200.00

Appendix C

Activity Title: RockUp! 2012 Workshop

Activity Description:

We are requesting funds for teacher travel to the RockUp! Civil Air Patrol workshop where teams will gain experience through hands-on activities. They will learn how to build a sounding rocket payload and build it from a kit provided to them. Teams of 3 will build their RocketSat within the first day, and then will launch it on the second day of the workshop. The information and experience using these RocketSats is very important for students to learn because the hardware could be used on future RocketSat and possible even CubeSat flights, which are currently being developed by affiliates of NASA Arkansas Space Grant Consortium. The workshop is June 21-June 22, 2012 in the Raytheon Camden Test Facility. The team will build real sounding rocket payloads and launch it on a two stage Terrier-Orion rocket. Raytheon will provide the rocket (a two stage Terrier-Orion) and the launch operations during the workshop. The hands-on workshop is about learning to build sounding rocket payloads, not rockets. There is also a tour that is involved, and students are briefed on sounding rocket environments for future flights. Two educators will be present during the activity. Ms. Lane will be included in the team and Ms. Dohl will be learning from observation. Following the activity, the team will then give a presentation to each of the science departments explaining the different aspects that went into the build.

Upon return from training, teachers will select a set of students to duplicate the project they learned at the training. Using this control group, they will then construct lesson plans for the scaling of the project for students at Papertowel High School. The school district will provide materials for the resultant project to the students.

This travel request is relevant to CAP because it will help build a continuing Project-Based Learning Unit based on what the teachers learn at the workshop. This will build student's interest in aerospace and STEM-based activities. It is relevant to NASA because it will introduce students to NASA's space-flight missions and to different aerospace-related vocational fields.

Number of Students and Participation:

The developed activity will consist of 2 students. It will be a team of 3, two students and one teacher. Two students who excel in the classroom will be chosen to accompany the teacher as part of their team. The students will share their experience with the entire class, as well as the science department of our school.

New Aerospace-related materials:

Information regarding the building of RocketSats and the instruments included during assembly. Also, the information learned while touring the Raytheon Test Facility will be shared in the classroom. The experience of the construction and all that goes into the process will be introduced. The workshop will also provide different contacts for the teachers, as well as pictures and videos to help demonstrate to future classes. It will give us a new avenue of teaching to help promote interest in aerospace related education.

Arkansas Frameworks:

Physical Science Curriculum Framework

Standard 5: Students shall demonstrate an understanding of the role of energy in physics

Standard 6: Students shall demonstrate an understanding of the role of forces in physics

Standard 7: Students shall demonstrate an understanding of wave and particle motion

Standard 9: Students shall demonstrate an understanding that science is a way of knowing

Detailed Budget Justification:

Travel: Hotel (1 night @ \$94) Swanky Inn	\$ <u>94.68</u>
Food (2 days x 2 @ \$25/day)	\$ <u>100.00</u>
Mileage (112 miles @ .42 a mile)	\$ <u>47.04</u>
Total:	\$ <u>241.72</u>