

## **Young Aerospace Visionaries Contest – Announcement (2024)**

The American Institute of Aeronautics and Astronautics (AIAA) Northern Ohio Section (NOS) is interested to know what creative-minded students have to say about the future of air and space travel and related technologies. The AIAA NOS is challenging students to create a depiction of their vision for a futuristic aerospace-related topic. They are to write a short essay to describe and offer rationale for that vision. The topics are unique for each grade range as detailed below. This year, both topics relate to the theme of sustaining a human presence in space. These topics are inspired by the National Aeronautics and Space Administration's (NASA's) Artemis program. 5<sup>th</sup> – 8<sup>th</sup> graders will generate a general vision for a sustainable future on the Moon, while the K-4<sup>th</sup> graders will focus their vision on a dwelling place for astronauts living on extraterrestrial bodies. Descriptions for the topics are provided below. Additional background is available in a separate document found on the contest website (Topic Background 2024). The background document is a supplemental resource for teachers, parents, and ambitious students to guide learning and peak interest in the process of forming a vision.

### Grades K-4 Topic Challenge: My Space House

On Earth we typically live in houses or apartments that give us shelter. They provide us with the amenities to control our environment and supply us with various necessities and luxuries including water, electrical power, and heat. They provide us with space for doing many basic activities including eating, resting, bathing, communicating with others, and much more. When you think about it, our homes do a lot for us and make our lives convenient. But what would a house look like on an extraterrestrial body in space, such as the Moon or Mars. The environment is harsher, and survival is tougher. Without a breathable atmosphere, protection from the Sun's radiation, and easy access to consumable resources, how are we to survive and thrive? What features would a home need to enable our success?

What would your future space house look like? As you form your vision, you might consider some of these questions: What challenges does an environment such as the Moon or Mars pose? How could those challenges be addressed in the design of your space house? What features should the house have? What features are the most important and what features are luxuries? What technologies need to be developed to make your vision a reality? How does your vision support self-sufficiency and sustainability?

\*See the "Topic Background 2024" document for more information

### Grades 5-8 Topic Challenge: A Sustainable Future In-Space

The NASA Artemis Program is an ambitious initiative to take humans back to the Moon and then onto Mars. This time, we are returning to the Moon to stay. The purpose will be to learn how to sustain a human and robotic presence on the Moon before we venture far from our home planet of Earth. On the Moon we intend to learn a lot. We'll be validating technologies for deeper exploration of the solar system. We'll also be performing scientific experiments and learning to live more sustainably on distant bodies in space through establishing a means of power production, in-situ resource utilization (extracting, refining, and using resources found onsite), establishing mobility and modes of communication, and gaining experience with sustaining extended human expeditions away from Earth while enduring a harsh environment. There will be various challenges to building, maintaining, and expanding upon the foundations for a civilization on the Moon.

As we build a presence on the Moon and expand upon the achievements of the Artemis program, what will a sustained presence on the Moon look like? As you form your vision, you might consider some of these questions: How will we use the Moon to benefit humankind? How will the resources on the Moon be utilized? What challenges will there be to maintaining our presence on the Moon? How will we sustain our presence there? How

sophisticated will our presence on the Moon become? What technologies will we need to develop to enable your vision?

\*See the “Topic Background 2024” document for more information

#### General Guidelines:

Create a visual depiction capturing the key points of the vision and an accompanying essay addressing the following:

- Provide a description of the student’s vision depicted in the picture
- Provide rationale as to why the student thinks their vision could become a reality and why their vision is innovative

Students will compete within their grade range, which will be K-4, and 5-8. Expectations will differ based on the age group and judges will take the student’s grade level into consideration. This is an individual contest meaning that each project should be affiliated with a single student. However, it is okay for teachers or parents/guardians to engage a group of students in brainstorming sessions prior to each individual’s development of their vision.

#### Grades K-4 Guidelines:

Grade K-4 students are expected to provide a handmade picture (no computer aided design tools). The essay should not exceed 500 words<sup>1</sup>. References to support their rationale for their vision are not expected but are welcome and encouraged.

#### Grades 5-8 Guidelines:

Grade 5-8 students may provide a handmade picture or utilize computer-aided design software to create the picture. Any images used in the picture should be original (not copied and pasted from other sources). The essay should not exceed 1000 words<sup>1</sup> and should demonstrate that a good amount of thought has been put into their vision. The students should do some research, list references where applicable, and use those references to support their vision. They may also use logic and reasoning to make their arguments.

#### Prizes:

Winners will be chosen by AIAA NOS volunteer judges for each of the age/grade categories.

- 1<sup>st</sup> place winners will receive a cash award of \$150.
- 2<sup>nd</sup> place winners will receive a cash award of \$75.
- 3<sup>rd</sup> place winners will receive a cash award of \$50.

In addition, all winners will be given free admission for themselves and up to three guests to the Great Lakes Science Center in Cleveland, Ohio. They will be invited to the AIAA NOS annual awards picnic<sup>2</sup> (typically in August or September) where they will be recognized and will have the opportunity to talk with engineers and scientists working in the aerospace field. Winners will be notified through the email they provide on the application form. They may also be asked for contact information to enable the mailing of prizes. All email correspondence from the AIAA NOS will occur via the AIAA NOS STEM K-12 Outreach email (aiaanos.stem@gmail.com)

#### Grade K-4 Scoring Criteria:

Vision (40%)

- Creativity – Is it creative? Original? (30%)
- Detail/Scope – How much detail is included? How expansive is the vision? (10%)

Picture (40%)

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<sup>1</sup> Word limits are enforced to manage the workload on the judges.

<sup>2</sup> The picnic is held outdoors and is subject to change dates or be cancelled due to weather.

- Clarity – Is it clear what you are trying to represent? (30%)
- Neatness – Is it neat? (10%)

Essay (20%)

- Clear and concise description of the vision (10%)
- Rationale for the vision (10%)

#### Grade 5-8 Scoring Criteria:

Vision (40%)

- Creativity – Is it creative? Original? (25%)
- Detail/Scope – How much detail is included? How expansive is the vision? (15%)

Picture (20%)

- Clarity – Is it clear what you are trying to represent? (15%)
- Neatness – Is it neat? (5%)

Essay (40%)

- Clear and concise description of the vision (25%)
- Rationale for the vision (15%)

To be considered for prizes, students should submit a picture that addresses the topic for their grade level with an accompanying essay to the AIAA NOS STEM K-12 Chair via email ([aiaanos.stem@gmail.com](mailto:aiaanos.stem@gmail.com)) no later than April 12<sup>th</sup>, 2024. The picture may be submitted as a JPEG or PDF file. The essay must be submitted as a PDF<sup>3</sup>. The form attached to the end of this document should also be filled out and submitted. The form should be printed, signed, scanned, and saved as a PDF<sup>3</sup> prior to sending. Please submit all the documents at the same time in a single email so that the submissions can be easily tracked and consolidated for judging. Winners will be notified by email no later than May 12<sup>th</sup>. The AIAA NOS looks forward to your submissions. For news and updates related to the contest, please refer to the AIAA NOS webpage (<https://engage.aiaa.org/northernohio/stemk12/yavc>).

Note to STEM teachers and school administrators:

Please consider becoming an AIAA Educator Associate member. This membership is FREE and will keep you informed of AIAA K-12 outreach events and provide access to educational materials. You can learn more by visiting the following link:

<https://www.aiaa.org/membership/types-of-membership/educator-membership>

Check us out on social media and visit our websites:

Twitter: [www.twitter.com/AIAANorthernOH](https://twitter.com/AIAANorthernOH)

Facebook: [www.facebook.com/AIAANOS/](https://www.facebook.com/AIAANOS/)

AIAA Engage Community Website: <https://engage.aiaa.org/northernohio>

Website: <https://aiaanos.org>

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<sup>3</sup> PDF format is required to assure the file(s) can be opened. Furthermore, PDF format provides a static file appearance which reduces the possibility of the file(s) being inadvertently altered during file transfer or judge reviews.

## Young Aerospace Visionaries Contest – Applicant Form (2024)

To be considered for prizes in the Young Aerospace Visionaries Contest, please fill out this form and email it to the American Institute of Aeronautics and Astronautics (AIAA) Northern Ohio Section (NOS) STEM K-12 chair ([aiaanos.stem@gmail.com](mailto:aiaanos.stem@gmail.com)). Completion of the form will require the involvement of the student and a legal guardian. A teacher may take the place of a legal guardian to attest to the integrity of the student's submitted materials, but not to give permission for publications. Refusing to allow publication of the student's name or work WILL NOT disqualify them from prizes. This form should be printed, filled out, signed, scanned, and saved as a PDF prior to sending. **BE SURE TO NEATLY FILL OUT THE FORM SUCH THAT YOUR ENTRY CAN BE READ ACCURATELY, PARTICULARLY THE EMAIL ADDRESS.** All materials should be submitted together in the same email. Required materials include this form, the picture created by the student, and the student's essay. Each student may only submit one package (one picture, one essay, and one application form). The same student will not be selected for multiple awards. The student must be a resident of or attend school within the boundaries of the region represented by the AIAA NOS. A full list of the counties within the AIAA NOS region is on the following page.

Student's Name: \_\_\_\_\_

Student's School (if homeschooled put homeschool): \_\_\_\_\_

County of School or Residence: \_\_\_\_\_

Student's Grade Level: \_\_\_\_\_

Email Address: \_\_\_\_\_ **(\*this is the email address that will be used to notify the winners of the contest – this may be the email address of the student or a legal guardian or teacher)**

Parent/Guardian/Teacher confirmation of integrity:

I \_\_\_\_\_ (printed name of a parent, guardian, or teacher) confirm that, to my knowledge, the student did not receive an excessive amount of help from myself or any other person. I also attest the information provided above is accurate.

Parent/Guardian/Teacher Signature: \_\_\_\_\_

Relation of the signee to the student (mother/father/guardian/teacher/etc.): \_\_\_\_\_

Permission to publish confirmation:

I \_\_\_\_\_ (printed name of legal parent or guardian) give the American Institute of Aeronautics and Astronautics Northern Ohio Section permission to mention my child and their submitted materials in publications and on the organization's websites.

Parent/Guardian Signature: \_\_\_\_\_

### **Counties covered by the AIAA NOS**

\*All the counties are in the state of Ohio

- Ashland
- Ashtabula
- Carroll
- Columbiana
- Crawford
- Cuyahoga
- Defiance
- Erie
- Fulton
- Geauga
- Hancock
- Harrison
- Henry
- Holmes
- Huron
- Jefferson
- Lake
- Lorain
- Lucas
- Mahoning
- Medina
- Ottawa
- Paulding
- Portage
- Putnam
- Richland
- Sandusky
- Seneca
- Stark
- Summit
- Trumbull
- Tuscarawas
- Wayne
- Williams
- Wood
- Wyandot