8 week engineering challenge!

Completely free, we front all materials!

Design, build, prototype and test your device!

Save the Enlightened People!

Enlightened Challenge 2026

An 8-week race against destruction. Design the device that could save the Enlightened People. Free to join with full tools, mentors, and training.

YOU WILL LEARN:

- Hands-on engineering design
- Practical programming fundamentals
- Rapid prototyping & real device testing
- Teamwork, creativity, and problem-solving

Learn More and Register at:
portal.sspvpmo.org

Registration closes Feb 28th

Enlightened Challenge 2026

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1.0 Introduction

The purpose of this challenge is to give students an opportunity to explore several engineering fields used in the space industry. These fields include electrical, mechanical, computer science, and the ability to apply them as one. This exploration is on a broad level and intended to help explain what each field may offer as a career. The challenge is also a platform to find great new employees for our workforce. By participating in this challenge, students may be offered employment opportunities from partnering organizations. This event is hosted by local engineers from AFRL who are excited to connect with and support the next generation of innovators in our community.

The Enlightened Challenge is designed for students currently enrolled in an academic program. Multiple teams can be formed from one school, but participants may only be registered with one team.

To register, go to https://portal.sspvpmo.org/enlightened-challenge/ Reference material will also be available from this site.

Problem Scenario:

> One day, we (Earthlings) were experimenting in space and found a planet known as *Luminescent*. On the planet there is an alien race known as the *Enlightened*, with a strange resemblance to our common light bulb. One of them named Eddison was in a spacecraft orbiting their planet, but he got lonely. He dropped a rope back to the planet and slid down, but now he can't get back up. They have challenged us (the Earthlings) to produce a bright solution and help return Eddison to his spacecraft.

1.1 Challenge Overview

Using only the items provided in the *Kit-O-Stuff,* participants will design and build a way of safely returning *Eddison L. Bulb* (a light bulb) up his rope and back to his ship. Eddison will need to be powered on for his journey.

Participants will decide when and where to conduct the design and build sessions. This information needs to be communicated to AFRL by the end of the 1st week. At the end of the 6 weeks, participants will meet at the final event location hosted by AFRL (location will be disclosed closer to the event). Participants will demonstrate their solution to the challenge to one of the Enlightened.

Each team's solution for helping Eddison will be analyzed by our alien friends and AFRL hosts. They will choose the best solution to get up to the spacecraft. A guide for what the aliens are looking for is listed in the scoring section.

1.2 Kit-O-Stuff

AFRL will supply the *Kit-O-Stuff* prior to the start of the Challenge. Only items from the Kit-O-Stuff are allowed to be used in construction of the team's solution. Not all items must utilized. Externally provided tools are allowed as needed. A computer (not supplied) will be required for uploading code. Decoration, using paints and writing utensils, are allowed. After receiving your *Kit-O-Stuff* box, verify that all items found in the table are included.

Each team will be allowed to select **one additional component** for their solution, but it must be a reasonable substitute, addition, or replacement for something within the Kit-O-Stuff. The Challenge organizer must approve the additional item selected by each team. This item may also be a kit that contains multiple parts. The Teams will also be allowed to 3D print parts as needed. Printer filament can be requested from AFRL if needed.

Qty	Kit-O-Stuff Items
1	Red Cat Racing RC Car
1	ELEGOO UNO R3 Arduino Starter Kit
10	Popsicle sticks
5	Syringes
2	12V LED Light Bulbs
2	9-volt batteries
5	Foam board sheets
1	Super Glue
1	Roll Gorilla tape
5	Ball point pens
5	Paper clips
2	Blank CD's
As needed	3D printing filament
1	Cardboard box
20 ft	2" Webbing
	Item of team's choice

1.3 Challenge layout

The challenge will have a 2" wide nylon webbing suspended vertically 20' from Eddison's spacecraft, with a 2 lb weight tensioning it at the bottom. The webbing is attached to the bottom of the space craft. (See drawing details in the Appendix)

1.4 Challenge requirements

The team's solution will need to get 1 light bulb up to the spacecraft at the top of the 2" webbing. No flying vehicles are permitted. The light bulb will need to be illuminated during its journey. A visible LED will need to blink "DON'T PANIC" in morse code.

1.5 Challenge scoring

Below is a list of criteria that the aliens will be looking for in each design. As not all the bullets need to be completed, the more that can be accomplished, the better chance the aliens will choose your solution for awards.

- A solid structure that supports the light bulb
- A power system that illuminates the light bulb
- Visible LED that is blinking "DON'T PANIC"
- The solution can get the light bulb up to the spacecraft
- A docking indicator actuated when the light bulb reaches the spacecraft
- The solution can return back to the planet
- The lightbulb can be delivered with speed
- The light bulb can be placed inside the spacecraft
- Decorative and flashy
- Display the details of the journey (digital read out of details)
- Autonomy of the delivery system (hands off once it started)
- Story of how your solution came to be

1.6 Safety

Safety is a top priority for Earthlings and the Enlightened. Follow common sense practices when assembling and working with tools. At the final event, a safety briefing will be provided for all participants.

1.7 Final Event

The conclusion of the Enlightened Challenge will be a final event hosted by AFRL. This event will be held in mid-April (location disclosed closer to the actual event). Prior to this event, more information will be released to each team. The final event will be a simulation of the webbing to the spacecraft.

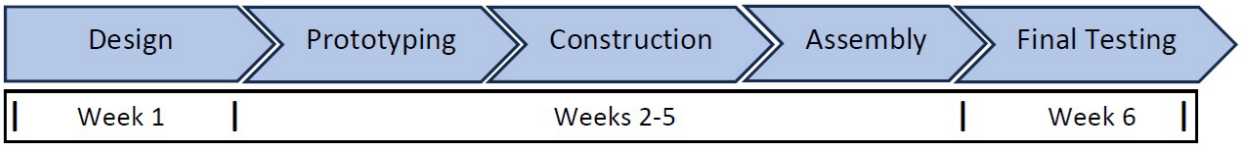
The location will include a prep area for any work necessary to get the team's solution ready for demonstration. Each team will have one table and a few chairs in their prep area. Power can be available in the prep area upon request.

Teams will have up to 2 hours for final preparation**.** During this prep time, judges will come and visit with the teams. Each member is encouraged to share what they learned and accomplished. The judges will assign a 20-minute time slot in which to demonstrate their solution to *Lee (Eddison's brother)* during this time. The course will also be open during the prep time for any testing the teams may want to do during the prep time.

Although this challenge is about engineering design, testing, and creativity, there will be an award ceremony at the conclusion of the final event to recognize the success of the journey. Team awards will be: 1. Most creative 2. Simplest design 3. Best use of code 4. Best overall.

2.0 Pathway to Success

Solutions are great, but they are even better if they become real. So often solutions will die due to lack of time. This challenge is only 6 weeks long, so it is important to have a path to success from the start. We have suggested following the figure below for a better chance of success.



AFRL Image

The design phase is critical to the outcome of the project. This is where the "big ideas" come from. All ideas are useful during brainstorming, but attainable designs need to be created to be successful in the final event. Don't spend too much time talking about all the little details; paper clips and duct tape solve some of the hardest problems in a pinch. Document all ideas as you may have to circle back and redesign some things later.

Prototyping is a great way to prove your ideas work. Prototyping is meant to be quick and dirty, so do not spend a ton of time doing this. Once your team feels good with the design, begin constructing and assembling it. Some redesigns in the first few weeks is normal. When you reach weeks 5 and 6, however, you must get to the assembly and testing phase, or you may not finish your solution. Remember, you can always reach out for support, even when you need a small amount of help.

3.0 Support

Each week, the registered teams can meet with AFRL support engineers (virtual or in person). In these meetings, participants should share their progress and any difficulties they are having. Think of them as a helpful resource or 'phone-a-friend.' Participants are encouraged to reach out to the Enlightened Challenge organizer anytime they need help.

Title	Name	Contact info
Challenge Organizer	Emma Fuentes	emma.fuentes.1.ctr@spaceforce.mil
Challenge Organizer	Rob Foreman	robert.foreman.1@spaceforce.mil

Appendix A: Mechanical and General Support

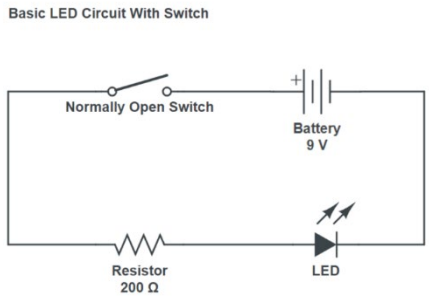
A helpful explanation of the engineering process is available on YouTube:
Engineering Process Video

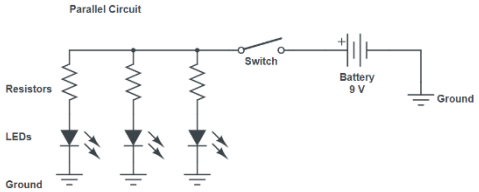
Depending on each design, the mechanical structure may be dramatically different. Remember EVERYTHING in the Kit-O-Stuff can be used, including the packaging. Reach out to the Enlightened Challenge organizers right away with any mechanical questions.

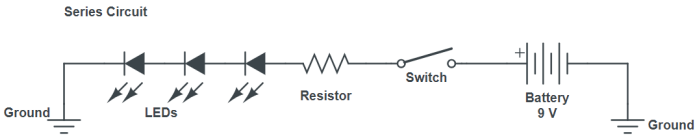
Appendix B: Electrical Support

Helpful video links:
Ohms law, basic electron flow -- Ohms Law Video
Series and Parallel circuits -- Electrical Circuits Video

Wiring Diagram Examples







AFRL Images

Appendix C: Coding Support

Paul McWhorter has 68 awesome Arduino tutorials. Start here first, get your iced coffee ready.
Arduino Tutorial

ELEGOO starter kit download:
Amazon Link

Arduino IDE download:
Arduino IDE Software

Appendix D: Technical Drawing of Set Up