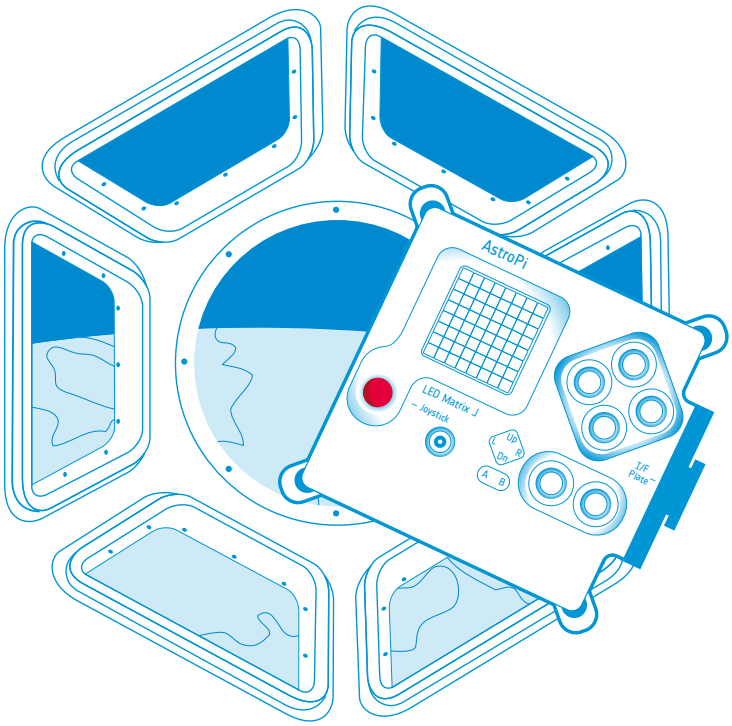
teach with space

→ EUROPEAN ASTRO PI CHALLENGE 2017-2018

Mission Zero Guidelines



1. Introduction

ESA's Education Office in collaboration with the Raspberry Pi Foundation (RPF) is challenging teams of school students who are 14 years old and younger to join the European Astro Pi Challenge – Mission Zero, and to write a short computer code in Python language. Mission Zero is not a competition, so all codes respecting the mission requirements described below will be run on the International Space Station (ISS)!

After the codes have run on the ISS, ESA's Education Office will give the participating teams an electronic certificate with the timestamps of the code running on the ISS!

2. Mission Zero overview

For Mission Zero, teams will have to write a simple computer code that displays a greeting message to the crew using the Astro Pi LED matrix and that measures and shows the temperature in the ISS cabin. Teams will not need a physical Astro Pi computer and can just use the Astro Pi Sense HAT web emulator for Mission Zero: thanks to the emulator students will be able to virtually test and run their code from any computer connected to the internet. Each team's code is guaranteed to run in space for 30 seconds!

3. Who can participate in the Challenge?

All the following eligibility conditions have to be fulfilled:

- Participation is open to teams of students up to and including 14 years old.
- Each student team must be composed of a minimum of 2 up to a maximum of 4 students.
- At least 50% of the team members must have the nationality of an ESA Member or Associate Member State[1].
- Team members must meet one of the following requirements:

  a) be enrolled full-time in a primary or secondary school located in an ESA Member or Associate Member State; ESA will also accept entries from primary or secondary schools located outside an ESA Member or Associate Member State only if such schools are officially authorised and/or certified by the official Education authorities of an ESA Member or Associate Member State (for instance, French school outside Europe officially recognised by the French Ministry of Education or delegated authority).

  b) be home schooled (certified by the National Ministry of Education or delegated authority in an ESA Member or Associate Member State).

  c) be a member of a science/code club, enrolled full-time in a primary/secondary school in an ESA Member or Associate Member State.

[1] **ESA Member States in 2017:**
Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, United Kingdom.

ESA Associate States in 2017:
Canada, Slovenia

- Each team must be supervised by a teacher or mentor acting as the team's point of contact with ESA's Education Office.

There is no limit to the number of teams a school or club can enter, but each student can only be a member of one team. Each team can submit one entry only.

4. How to submit your entry

Teachers first have to register online through the Astro Pi Sense HAT web emulator for Mission Zero webpage. Once registered, teachers will get a dedicated identification number that they will have to give to their students in order for them to submit their entry.

The deadline to submit entries for the Astro Pi Mission Zero challenge is **26 November 2017**.

Late entries and entries that have not been submitted through the Sense HAT web emulator for Mission Zero will not be accepted.

5. Mission requirements and constraints

- Teams have to write and submit their code using the Astro Pi Sense HAT web emulator for Mission Zero.
- The code must show a greeting message (in any of the ESA Member or Associate States' languages) and the measured temperature inside the ISS on the LED matrix. Graphics can also be used to display the message and the temperature.
- The code should take no longer than 30 seconds to finish. Codes that take longer will be shut down when running on the ISS.
- All entries will be run on the ISS provided they contain no obscenities and respect the mission requirements and constraints described here.

6. Mission tools and supporting resources

Teams will only make use of the Astro Pi Sense HAT web emulator for Mission Zero, and computer programming is their only tool. No other hardware or equipment is foreseen. Therefore, teams do not need a physical Astro Pi to take part in the Challenge.

Teachers can find resources that explain how to use the Astro Pi Sense HAT here. ESA will also provide a teacher guide and a student activity at the kick-off of the Challenge.

7. Questions

For questions please check the FAQ section for mission Zero in the Astro Pi website at Raspberry Pi Foundation. If you can't find the answer you are looking for, please send an email to astropi@esa.int