



MOON CAMP

Moon camp competition 2023-2024



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In the future, to enable astronauts to stay on the Moon for long periods of time, new infrastructures must be developed to overcome important challenges. Such challenges include protection from radiation and meteorites, energy production, the extraction and recycling of water, food production and much more.

Your team can explore the Moon but also venture further into other locations in our Solar System.





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Space, outside of our home planet can be an extremely hostile environment for humans to live. Unlike Earth, the Moon has no atmosphere (it is in a vacuum), this means that there is no air to breathe. In addition, this lack of atmosphere leaves no protection from collisions with even the smallest meteoroids (the dust and rock debris present throughout the Solar System) or from harmful radiation from the Sun. One day on the Moon lasts for 27.3 Earth days; of this there are 14 days of day time, followed by 14 days of night time. The temperature variation between day and night time is extreme. The temperature can be as high as $+123^{\circ}\text{C}$ and as low as -233°C , depending on the location.





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Making a Home

What is the best place to live on the moon?



Choose your design tools and techniques
Decide how you would like to create your project

Space is an extremely harsh environment, knowing how materials and technology will perform in these conditions is necessary for the success of future space missions.

When designing a space habitat teams need to adapt their design to the environment, consider the use of local resources and provide protection and living and working facilities for the astronauts. Access to resources is hard, make sure you consider the sustainability of your design.





Prepare your Moon Camp project using any of these tools and techniques:

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Build your own interpretation of a Moon Camp with the materials you have to hand. Use your creativity and don't forget to be sustainable.



3D design software's can bring to life your imagination. Start with a beginners tool like Tinkercad.



Additive manufacturing, also known as 3D printing, is an important technique for space applications.



Rovers and robots are crucial in the support of space missions. Become an engineer and build your own robot.



Give an extra dimension to your design with 3D augmented and virtual reality tools.



Earn more about the space environment by performing scientific experiments.

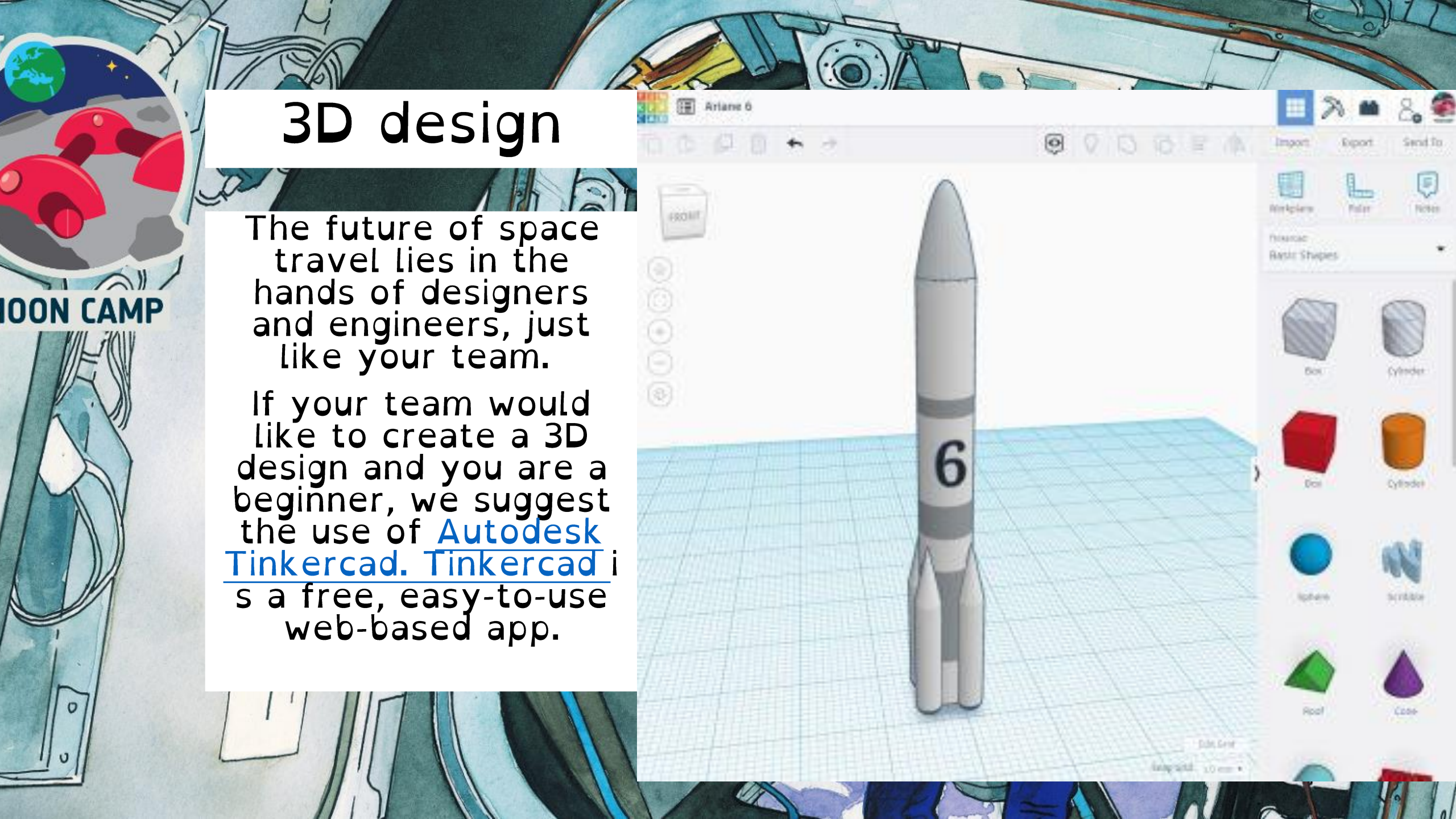


Art and crafts

Combine space exploration, arts and crafts by building an unique Moon Camp project.

The teams can design their Moon Camp without the need of special materials or softwares, by using materials readily available to them.





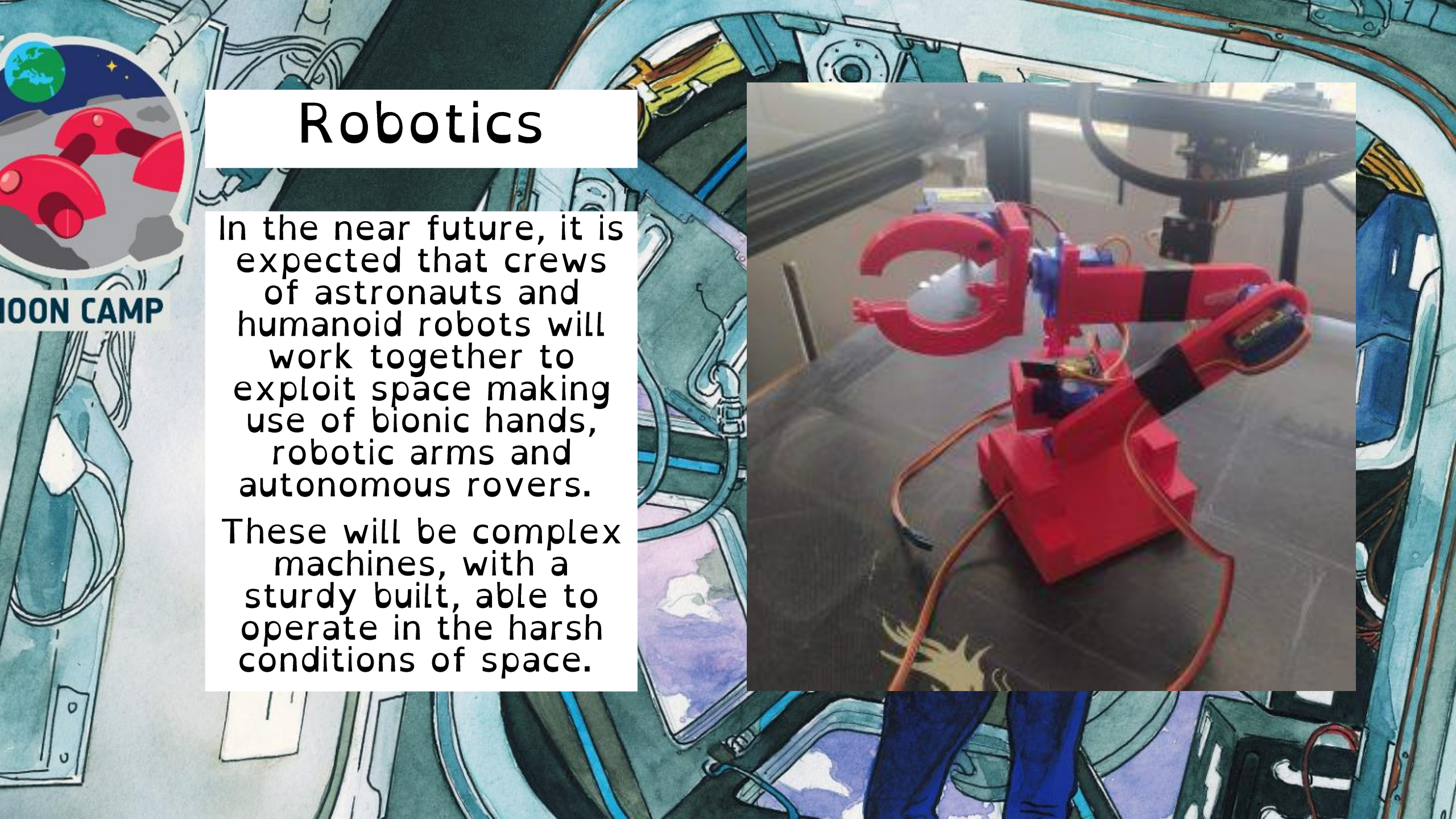
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3D design

The future of space travel lies in the hands of designers and engineers, just like your team.

If your team would like to create a 3D design and you are a beginner, we suggest the use of [Autodesk Tinkercad](#). [Tinkercad](#) is a free, easy-to-use web-based app.



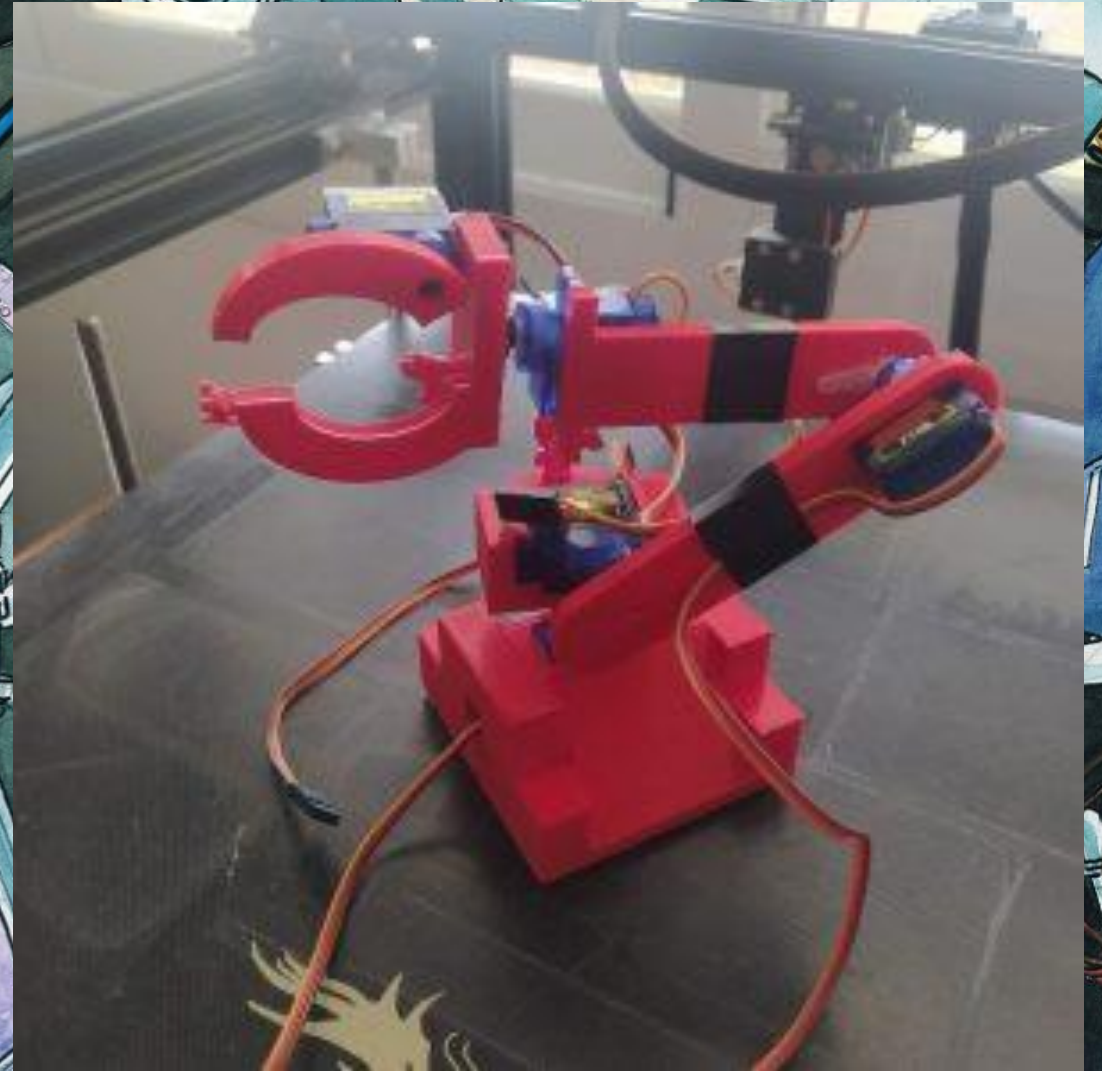


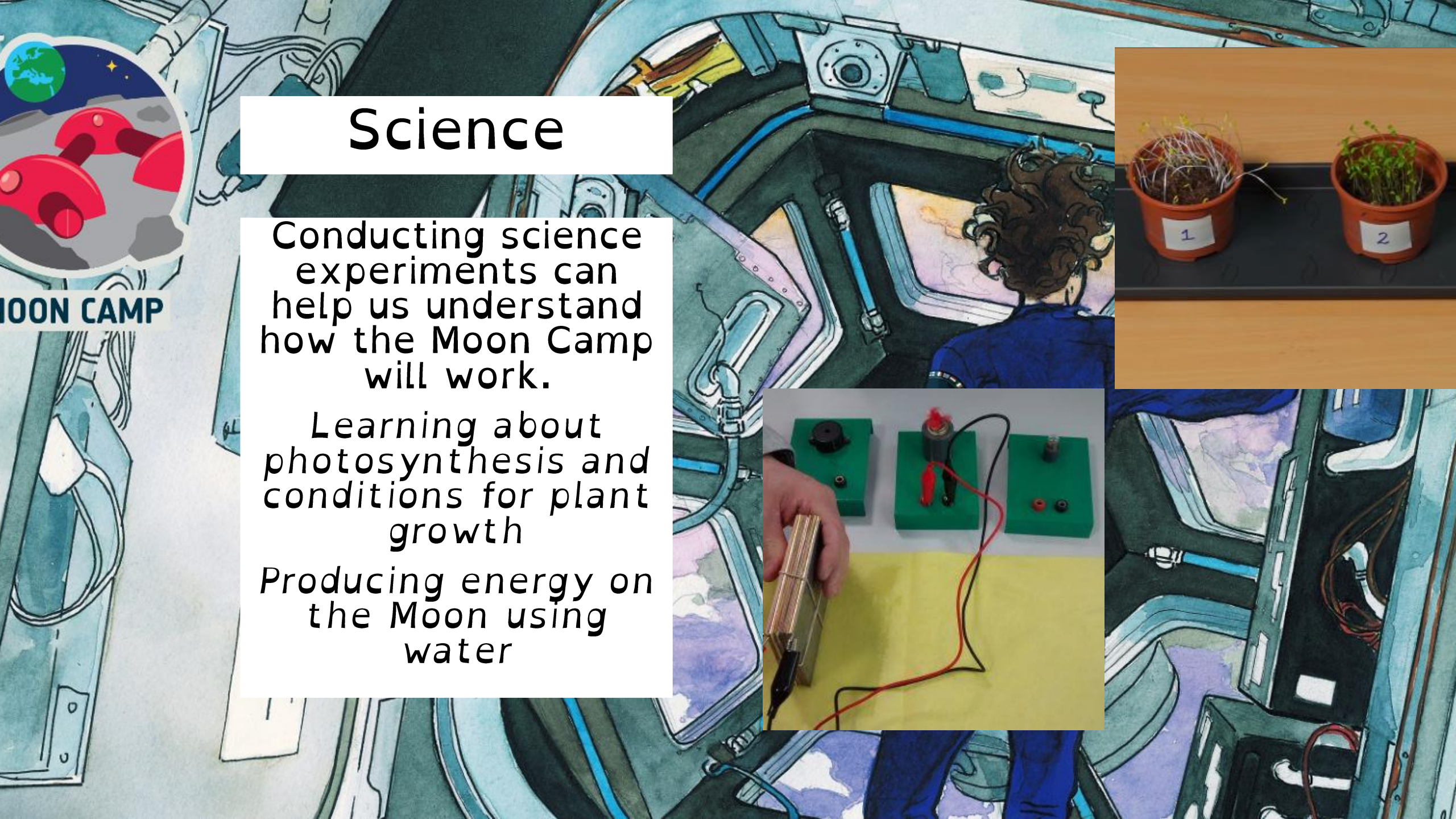
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Robotics

In the near future, it is expected that crews of astronauts and humanoid robots will work together to exploit space making use of bionic hands, robotic arms and autonomous rovers.

These will be complex machines, with a sturdy built, able to operate in the harsh conditions of space.





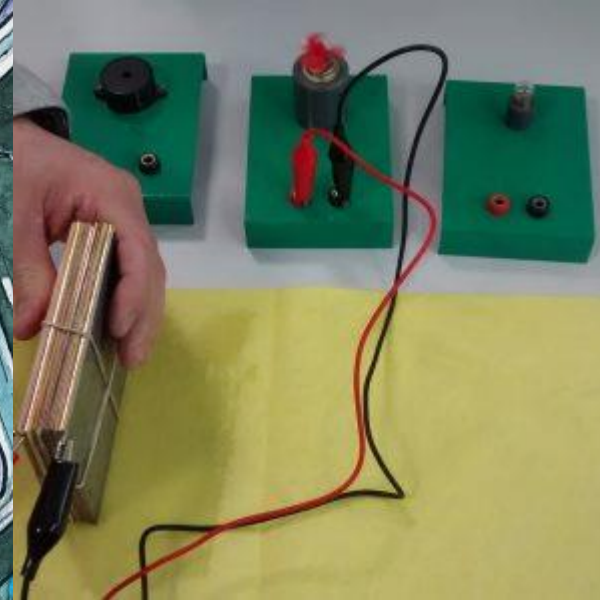
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Science

Conducting science experiments can help us understand how the Moon Camp will work.

Learning about photosynthesis and conditions for plant growth

Producing energy on the Moon using water





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What to include



Use of local resources (e.g. lunar soil, water ice)
Technological solutions (e.g. power source, recycling system, food growth chamber)
Protection (from meteorites and radiation)
Living and working facilities for at least 2 astronauts.



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Who can enter?

To participate in Moon Camp Explorers, teams should be comprised of 2 to 6 students and must be supported by a teacher, educator or parent. The project must be submitted by the teacher or educator.

Participation in Moon Camp Explorers is open worldwide* to teams of students aged up to 14 years old.

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



What do you need to do?

Create your team:
Bring together a team of space explorers to create a space habitat for the astronauts of the future.

Develop your project:
Be creative! In this edition you can explore the Moon or other places in the Solar System. You can also develop several different types of projects.

Submit your project:
The deadline for submissions is the 20th March 2024. Submit your project to receive a participation certificate and an invite to join the final event. All projects will be published in the Moon Camp Gallery.



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Timeline

November:

Create your team and begin brainstorming ideas

March:

Submit your final idea to Miss Snow

June:

Your submissions are presented to a board of experts.

July:

Winners announced and certificates given



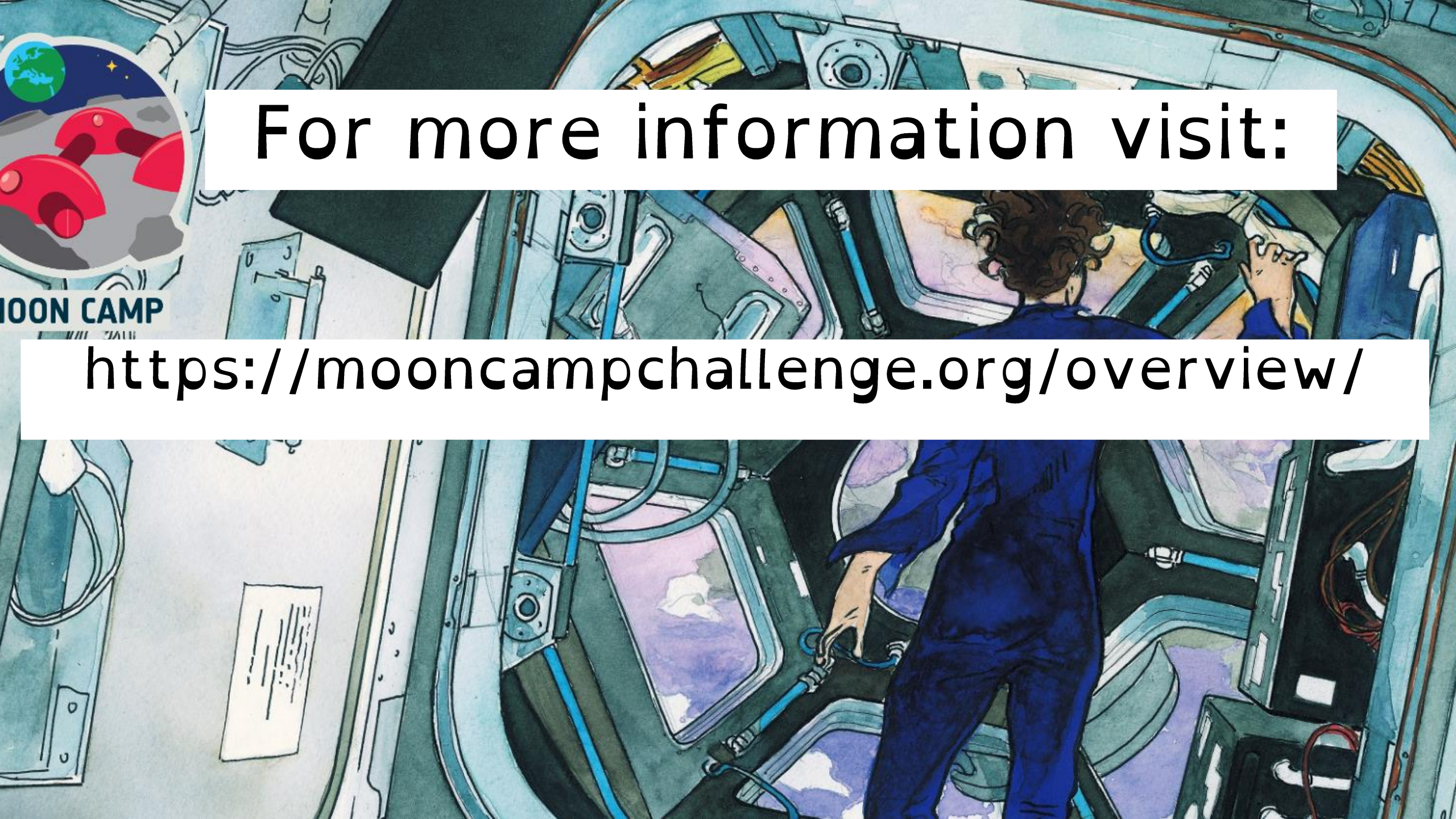
How to submit your entry?

More information on how to submit your entry will come out closer to the time. You will need to submit a picture of your final design. Or a website link to your Tinkercad submission. I will then submit this on your behalf and wait for it to be judged.



So, what is the prize?

The winning teams of Moon Camp Explorers and Moon Camp Pioneers will receive a 3D printer sponsored by Airbus Foundation, ESA goodies, and the opportunity to participate in a live webinar with an ESA astronaut. All children who enter will receive a Moon Camp certificate.



For more information visit:

<https://mooncampchallenge.org/overview/>