

The Space Economy: Careers in Exploration

Project Objective:

To explore the career opportunities in the field of space exploration and mining, considering both existing roles and emerging professions.

Learning Outcomes:

- Gain awareness of the diverse career opportunities in space exploration and mining
- Develop research skills by investigating different roles and areas of expertise in the field
- Foster creativity and imagination through visual expression of space careers
- Engage in critical thinking about the skills and contributions needed for future space careers
- Promote awareness of global issues and encourage action towards achieving sustainable development goals through space exploration and mining endeavors

Materials Needed:

- Access to research materials about space exploration and mining careers
- Art supplies (if creating visual aids)
- Video recording equipment (if creating videos)

Sustainable Development Goals

What are the SDGs?

The United Nations Sustainable Development Goals (SDGs) are seventeen international goals aimed at improving the quality of life, preserving the environment, and promoting sustainable development for 2030. The goals are complementary as all of the components contribute to a holistic approach towards making the world a better place for everyone in the long run.

Exploration and mining in space are activities that have the potential to benefit humanity and the planet, and also cause harm. For example, innovation in space technology can assist with climate prediction and adaptation, however human actions in space may cause harm or raise new challenges to the planet (ie: greenhouse gas emissions, pollution, and social unrest).

SDGs Connection to Project

The Sustainable Development Goals (SDGs) aren't just about life on Earth—they can also help guide our actions beyond our planet. As humanity looks toward the future, space exploration and activities like lunar mining hold the potential to transform industries, generate new technologies, and address global challenges such as climate change and sustainable resource management. However, this transition also raises important questions about how we ensure that this progress is equitable and environmentally responsible.

This Careers in Space Exploration activity directly connects with several key SDGs by encouraging students to consider future careers, sustainability, innovation, and opportunities in the space sector. By exploring the connection between careers in space and the global goals, students will gain a deeper understanding of how their work on this project fits into the bigger picture of the future of work.

[Sustainable Development Goals](https://sdgs.un.org)
<https://sdgs.un.org>



Sustainable Development Goals

SDGs Connection to Project



Industry, Innovation, and Infrastructure. By engaging youth in activities centered around space careers, we are fostering a generation that is not only enthusiastic about innovative technologies but also committed to sustainable practices in space development. This alignment encourages young individuals to contribute to building resilient infrastructure and promoting inclusive and sustainable industrialization.



Responsible Consumption and Production. Careers in space exploration are significantly enhancing our understanding and implementation of sustainable practices. Engineers and scientists working on space missions develop advanced technologies for material use and waste reduction, which have valuable applications here on Earth. By innovating with limited resources in the challenging environment of space, professionals in this field directly support the goals of responsible consumption and production.



Climate Action. Space exploration careers are at the forefront of climate adaptation and climate change strategies. Satellite technologies and space-based observations provide critical data for monitoring Earth's climate systems, enabling better climate action planning and policy-making. Careers in this sector involve developing tools and methods to track atmospheric changes, ocean temperatures, and greenhouse gas emissions, playing a crucial role in strengthening our response to climate adaptation and change.



Life on Land. Protecting terrestrial ecosystems and biodiversity is another area where careers in space exploration make a considerable impact. Remote sensing and Earth observation technologies developed by space professionals aid in monitoring deforestation, land degradation, and habitat loss. These insights are crucial for implementing conservation strategies and policies aimed at preserving life on land. Space exploration not only helps in understanding terrestrial ecosystems but also in fostering international cooperation for their protection.



Partnerships for the Goals. Space exploration inherently involves international collaboration, making it a unique driver for partnerships for the goals. Careers in this sector require working across borders, sharing knowledge, and pooling resources to achieve common objectives. This collaborative spirit enhances global partnerships and mobilizes resources, contributing to the achievement of the Sustainable Development Goals. By fostering innovation and partnership in space exploration, we strengthen global solidarity and capacity to achieve sustainable development.

Future Explorers: Careers in Exploration

Project Steps:

Introduction to Space Careers (Whole Class)

Introduce students to the idea that space exploration involves various fields beyond just astronauts, including scientists, engineers, technicians, and more.

Research (Individual or Group)

Assign students to research a career related to space exploration and mining. Encourage consideration to traditional roles such as astronauts and aerospace engineers, and newer roles such as space miner and space habitat designer.

Career Showcase (Group)

In groups, students will focus on a specific career or area of expertise to prepare a 'career showcase' presentation. The students can also be encouraged to envision their own unique career or role. In the showcase, they will highlight the responsibilities, skills, and potential contributions of this role to space exploration and mining efforts.

Future Explorers: Careers in Exploration

Careers & Areas of Expertise

- Astronauts
- Scientists
- Engineers
- Technicians
- Astrophysicist
- Aerospace Engineer
- Space Miner
- Space Habitat Designer
- Space Architect
- Robotics Engineer
- Lunar Geologist
- Space Lawyer
- Space Photographer
- Space Mission Planner
- Space Biologist
- Space Medicine
- Space Environmentalist
- Space Policy Analyst
- Lunar Base Manager
- Space Communications Specialist
- Journalist/Reporter
- Space Psychologist
- Space Law Enforcement

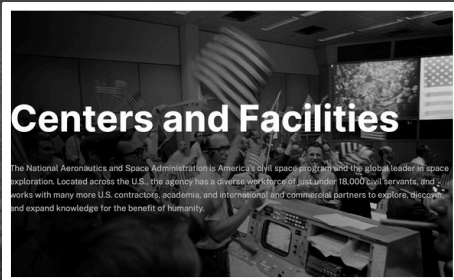
Future Explorers: Careers in Exploration

Learning Resources



Careers at NASA

<https://www.nasa.gov/careers/>



Centers and Facilities

NASA Centers and Facilities

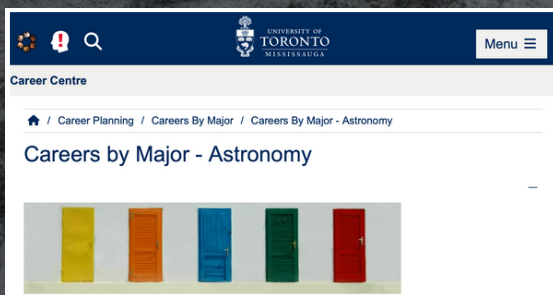
<https://www.nasa.gov/directories/>



NASA Directorates

NASA Directorates

<https://www.nasa.gov/centers-and-facilities/>



UOTM: Careers in Astronomy

https://www.utm.utoronto.ca/careers/career-planning/careers-major/careers-major-astronomy_

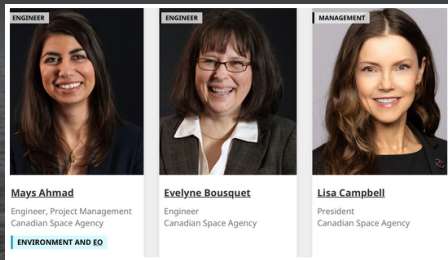
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Learning Resources



Humans of the CSA: Engineer Miriam Micael

<https://www.asc-csa.gc.ca/eng/multimedia/search/video/18377?search=career>



Government of Canada: Employee Profiles

<https://www.asc-csa.gc.ca/eng/jobs/employee-and-partner-profiles/>



Careers in the Space Sector

<https://www.asc-csa.gc.ca/eng/jobs/careers-in-space/>



Careers in Space Exploration

<https://www.asc-csa.gc.ca/eng/multimedia/search/image/6517?search=career>