



Expedition Mars Biology (BIO) Team



Job Description:

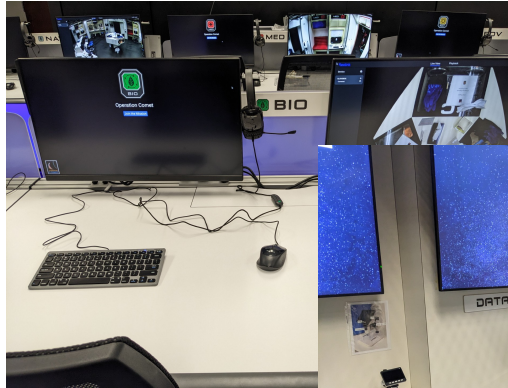
Conducting experiments and collecting data on microorganisms and space radiation.

Career Connections:

- Biologist
- Environmental Researcher
- Botanist

Helpful Skills:

- Collaboration
- Analyzing data



Vocabulary:

Mission Vocabulary:

Mission Commander – the person who is in charge of the astronauts onboard a space vehicle

Flight Director – the person who supervises a space mission from Mission Control

Simulator – an artificial environment created to resemble an actual place

Task Cards – a step-by-step set of written instructions for performing a job

Airlock – a device that permits the passage of people and objects between areas while minimizing the change of pressure and loss of air

Comet – a combination of frozen dust, rock, and ice found within the solar system

Nucleus: solid, frozen core of a comet

Coma: visible part of a comet surrounding the nucleus, containing evaporated gases

Tail: part of a comet pointed away from the sun; can be a gas tail or a dust tail

Long-Period Comet – a comet that takes over 200 years to orbit the sun

Docking – joining with a space station or another spacecraft while in space

Trajectory – the path followed by a projectile flying or another body moving through space

Descent – an action of moving downward, dropping, or falling

Altitude – the vertical elevation of an object above a surface (such as sea level or land) of a planet or natural satellite

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Satellite – an artificial body placed in orbit around the Moon, Earth, or another planet in order to collect information for communication

Orbit – the path followed by an object around another object

Crater – a basin resulting from the collision of an object with a planetary surface

Deploy – to bring into action and make useable

Atmosphere – the envelope of gases surrounding the earth or another planet

Impact – the action of one object coming forcibly into contact with another

Radiation – energy that moves from one place to another as a wave or stream of high-energy particles

Vocabulary for My Job:

Microgravity – an environment in which there is little to no gravitational force applied to objects or humans

Bone density – a measure of how thick and compacted bones are

Regimen – a prescribed course of medical treatment

Preventative – a course of action designed to keep something negative (such as illness, harm, or accidents) from occurring

Microorganism – a microscopic organism, such as a bacterium, virus, or fungus



Expedition Mars Robotics (BOT) Team



Job Description:

Using the robotic arm to conduct experiments and code programs for rover tasks.

Career Connections:

- Mechanical Engineer
- Software Engineer

Helpful Skills:

- Troubleshooting
- Problem-solving
- Collaboration



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Vocabulary for My Job:

Programming – the act of providing instructions to a computer to perform a set of actions without direct human control

Parent command – in programming, the event that triggers the nested tasks

Nested task – in programming, the event that occurs if the parent command is true

Calibration – the act or process of configuring an instrument to provide a result for a sample



Expedition Mars Geology (GEO) Team



Job Description:

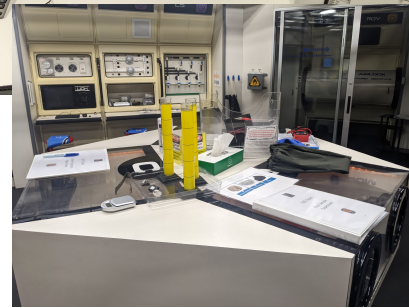
Conducting experiments with rocks and minerals.

Career Connections:

- Geologist
- Environmental Engineer

Helpful Skills:

- Collecting and analyzing data
- Collaboration



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Vocabulary for My Job:

Physical properties – features of a substance that can be measured without changing the sample with chemicals

Texture – a physical property that can be easily be observed by looking closely; can be coarse-grained, fine-grained, or glassy

Hardness – a physical property that is measured using the Mohs scale and determined using a scratch test

Magnetism – a physical property that indicates whether or not a material is magnetic

Mass – measure of how much matter is in an object

Volume – measure of how much space an object takes up

Density – the amount of mass in a particular space, calculated by dividing the mass of something by its volume

Displacement – the change in position of an object; method to measure volume



Expedition Mars Life Support (LS) Team



Job Description:

Maintaining the life support systems on the spacecraft to ensure the environment is safe for the crew during the flight.

Career Connections:

- Engineering design
- Hands-on experiments

Helpful Skills:

- Verbal communication
- Problem-solving
- Troubleshooting



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Vocabulary for My Job:

Air pressure – the force exerted by air on a surface, usually measured in millibars

Thermostat – the controls used to regulate a heating system

Configuration – the arrangement of different parts or components in a particular form or combination

Prototype – a sample or model of a new product

pH – a scale used to specify the acidity or basicity of a liquid



Expedition Mars Medical (MED) Team



Job Description:

Conducting medical tests on and developing treatment plans on the crew to ensure their health and safety.

Career Connections:

- Nurse or doctor
- Emergency Medical Technician (EMT)
- Nutritionist

Helpful Skills:

- Interacting with others
- Patience

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Vocabulary for My Job:

Nutrients – substances that promote growth, provide energy, and maintain life

Treatment – something that healthcare providers do for their patients to control a health problem, lessen its symptoms, or clear it up

Wellness – the optimal state of health

Deficiency – a lack or shortage of something



Expedition Mars Navigation (NAV) Team



Job Description:

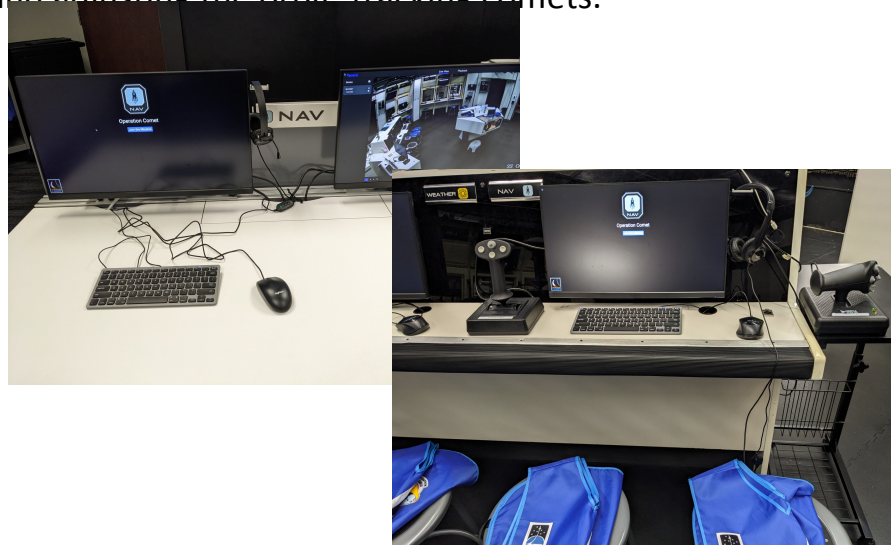
Commanding the spacecraft and adjusting the orbit; tracking comets.

Career Connections:

- Pilot
- Aerospace Engineer
- Mathematician

Helpful Skills:

- Communication
- Attention to detail



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Vocabulary for My Job:

Triangulation – a scientific method of determining the location of an object

Throttle – a device controlling the flow of fuel or power to an engine

Space debris – artificial material that is orbiting the Earth but is no longer functional, such as an old satellite or rocket stage



Expedition Mars Communications (COM) Team



Job Description:

Communicating messages between the Spacecraft and Mission Control and communicating critical messages to crew members throughout the mission.

Career Connections:

- Communication Systems Engineer
- Information Technologist

Helpful Skills:

- Reading aloud
- Keeping calm under pressure
- Multi-tasking
- Leadership



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Vocabulary for My Job:

Space debris / space junk – artificial material that is orbiting the Earth but is no longer functional, such as a satellite or rocket stage



Expedition Mars Rover (ROV) Team



Job Description:

Troubleshooting and assembling the ROV (Remotely Operated Vehicle).

Career Connections:

- Computer Scientist
- Mechanical Engineer
- Electrical Engineer

Helpful Skills:

- Following directions
- Collaboration
- Communication
- Remaining calm under pressure



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Vocabulary for My Job:

Rappel – descending to the ground from above, usually on a rope

Mission Critical parts – instruments that must be installed in order for the ROV to function, such as Communication Transmitter and Receiver, Camera, and Navigation Computer

Scientific Payload parts – instruments that the ROV does not need to function, but may be necessary depending on the mission objectives



Expedition Mars Weather (WX) Team



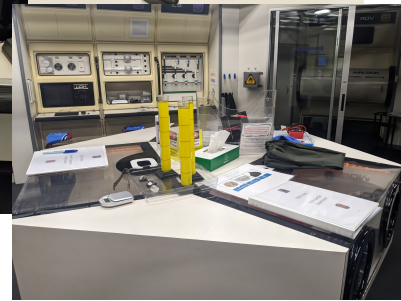
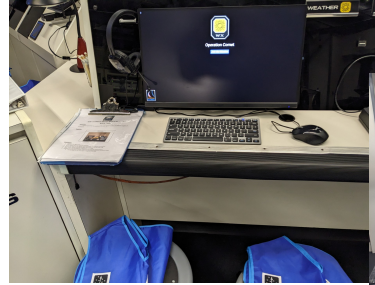
Job Description:

Researching solar weather using telescopes to capture images of long-period comets.



Career Connections:

- Meteorologist
- Astronomer



Helpful Skills:

- Collecting and analyzing data

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Vocabulary for My Job:

AU – “astronomical unit;” a unit of length stating the mean distance between the center of the Earth and the center of the Sun

Solar wind – type of solar weather in which there is a spray of particles caused by the Sun’s core temperature being incredibly hot

Solar flare – type of solar weather in which an explosion occurs on the Sun during a solar storm and is full of radioactive energy