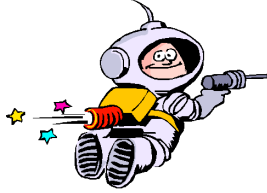


## SNC1D: Life in Space Assignment

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### Life in Space: Focus on the International Space Station (ISS)

**Purpose:** This assignment will help you understand more about the International Space Station (ISS) and understand how life is possible in space. It will also allow us to critically evaluate the movie Gravity as science or science fiction.

#### Tasks:

- 1) You will be assigned to research on the ISS. Questions are provided to guide your research. Feel free to develop additional questions within your topic.
- 2) Your group will be responsible for conducting a presentation on your assigned topic. Approach it as if you were in charge of astronaut training on the topic. You must generate a power point with images and video links where possible to support your presentation. Aim for 6-8 minutes in length. Follow the presentation guidelines when creating and delivering your presentation.
- 3) Be prepared to answer the discussion questions from the teacher after your presentation.

#### Guidelines for Effective Presentations

##### 1. Introduction

Clear convey your purpose.

- Outline what you will cover in your presentation.

##### 2. Organization:

- Often helpful for one group member to act as a moderator.
- Make sure each member contributes equally to the presentation.
- Stay within the 8-10 minute time frame
- Make clear and sequential arguments that are all connected to each other and lead to a clear conclusion.

##### 3. Content

- Make clear points that are supported by evidence. - provide examples -answer the how question
- Demonstrate a clear understanding of what is realistic and relevant.

##### 4. Visual Aids:

- Clear, neat & visually appealing
- Create illustrations, diagrams or graphics to convey information or ideas where possible
- When presenting text, use bullets, keep it short and sweet
- Interact with you visuals, refer to them directly, point things out on them
- Use videos where appropriate.

##### 5. Delivery:

- Be enthusiastic, expressive and confident.
- Speak naturally, clearly loudly.
- Make eye contact with the audience.
- Use appropriate gestures; think about your posture, what you do with your feet, your hands?
- Don't read your notes! Refer to them occasionally. \*rehearse what you are going to say

##### 6. Conclusion

Reinforce your key points – TAKE HOME MESSAGE.

7. Be prepared to answer discussion questions.

#### Evaluation

	Level 1	Level 2	Level 3	Level 4
APPLICATION Uses scientific evidence to make connections and analyze issues	Offers limited analysis and exploration of issues	Offers some analysis and exploration of issues	Offers significant analysis and considerable exploration of issues	Offers a thorough analysis and insightful exploration of issues
COMMUNICATION	Communicates with limited clarity and precision.  Limited adherence the presentation guidelines	Communicates with some clarity and precision.  Some adherence the presentation guidelines	Communicates with considerable clarity and precision.  Considerable adherence the presentation guidelines	Communicates with a high degree of clarity and precision.  Excellent adherence the presentation guidelines

### **Topic A: General Questions about the International Space Station**

- What is ISS? Provide an image or a drawing of ISS. The image/drawing should be large enough to be visible from a distance.
- What is its purpose in space?
- How many countries worked together to build the ISS?
- What was involved in building the station?
- What is involved in running and maintaining the station?
- What role did Canada play in the ISS project?
- How do astronauts earn the opportunity to spend time on the ISS? What Canadian Astronauts have spent time on the space station?

**A Discussion: How is the ISS depicted in the movie? Is it realistically presented? Why or why not?**

### **Topic B: Food/Water on the Space Station**

- How has the food that astronauts eat changed over the last 50 years?
- What kinds of foods do astronauts eat in space today?
- What methods are used to prevent food from spoiling?
- How do you eat in space?
- How do astronauts get their water on the space station?

**B Discussion: How is the food and water depicted in the movie? Are they realistically presented? Why or why not?**

### **Topic C: Environmental Controls on the Space Station**

- How are astronauts protected from harmful UV rays in space?
- What are the temperature extremes present in space? What temperature is it in the space station? How are astronauts kept warm?
- How is an environment with enough oxygen maintained for the astronauts?
- How is waste carbon dioxide removed from the air inside the space station?
- What is the effect of a lack of gravity on the human body? How do astronauts cope with this?

**C Discussion: How is the environment of space and within the ISS and other capsules depicted in the movie? Is it realistically presented? Why or why not?**

### **Topic D: Space Suits**

- What are the main parts of a space suit? How do they work?
- What are the environmental conditions within the suit?
- Do astronauts have to wear the space suits all the time? Why or why not?
- What are some safety measures that are built into space suits?
- Do you think space suits are comfortable? Why or why not?
- How long does it take to get in and out of the suits?
- How long can individuals participate in a space walk?

**D Discussion: How were the space suits, how they interacted with them and how they used them depicted in the movie? Is it realistically presented? Why or why not?**

### **Topic E: Waste and Sanitation in Space**

- How do astronauts shower and use the bathroom in space?
- Do they have to wash dishes or laundry?
- How do they keep their living quarters clean?
- What special sanitation issues do astronauts face that those of us on Earth don't worry about?
- What happens to all the waste generated by the station?
- When astronauts are in their space suits, is there a way for them to relieve themselves?
- What is space junk? What makes it up? How much of it is out there? Is it a hazard? How do we clean up the litter in space?

**E Discussion: Is there anything related to waste and sanitation depicted in the movie? The 'space junk' depicted in the movie became one of the biggest problems that astronauts dealt with. Is the situation realistically present? Why or why not?**

### **Topic F: Sleep, Relaxation and Exertion in the Space Station**

- Do astronauts require more or less sleep than normal when they are in space?
- How many hours of sleep do astronauts usually get each night?
- How do astronauts relax in space?
- Do astronauts sleep in a bed? If they do not, how do they sleep?
- What is the effect of a lack of gravity on the human body? How do astronauts cope with this?
- How do astronauts exercise in space?
- How do astronauts deal with the stress associated with space travel?

**F Discussion. Would astronauts be able to physically do what was depicted in the movie? Give examples of 3-5 things that are realistic and things that are not realistic.**

### **Topic G: Extraterrestrial Experiments**

- What are some examples of experiments that are conducted on the ISS?
- What do scientists hope to learn about life in space?
- How do scientists conduct controlled experiments in space?
- What Canadian scientists have conducted experiments in space? Describe their work.
- Describe the findings that have emerged from experiments done in space.

**G Discussion: When characters were moving through the space station was there any evidence of experiments or projects? What do you think they may have been doing? (relate to real experiments you research)**

### **Topic H: Other Technology in Orbit**

- What are satellites? What do they do?
- How many satellites are in orbit around the earth? How many different kinds of satellites?
- Where are the satellites in relative position to the earth?
- How fast are satellites travelling?
- How are satellites used to study the earth? Give specific examples.
- How are satellites used to study space? Give specific examples.

**H Discussion: What other technology in space was depicted in the movie? Is it realistically presented? Why or why not? Is the chain reaction of collisions possible as depicted?**