



## Student Guide

### The Challenge:

Design a sport using Newton's Laws of Motion that will be played by the astronauts in the microgravity environment of the International Space Station.

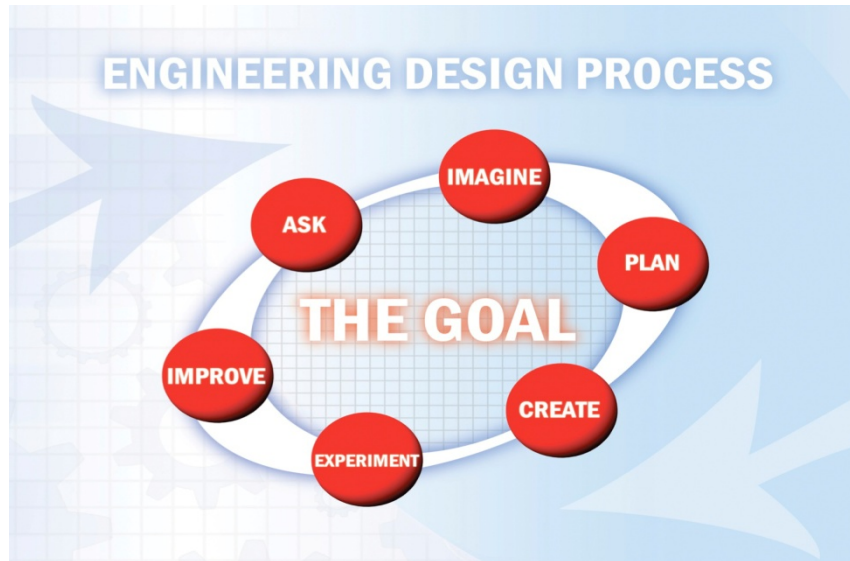
### Requirements:

- 3-6 team members
- 3-5 minute video
- Uses only materials available on ISS
- Game play area must be no larger than the dimensions of the U.S. Destiny Lab (18.5 meters long, 9.2 meters wide)
- Create a Game Instructions document with the objective, materials and rules of your game

### Materials Available on the ISS (choose 5 or fewer to use with your game):

- |                          |                   |
|--------------------------|-------------------|
| • Cotton handkerchief    | • Alligator clips |
| • T-shirts               | • Velcro          |
| • Washcloth              | • Duct tape       |
| • Towel                  | • Pens            |
| • Athletic exercise band | • Pencils         |
| • Bungee cords           | • Paper           |
| • Cotton swabs           | • Markers         |
| • String                 | • Flashlights     |

Team Name: \_\_\_\_\_



### **ASK**

What questions do you have about the Spaced Out Sports challenge?

### **IMAGINE**

Work in your group to come up with ideas. Make a list of all the ideas, even the crazy ones! Do you want to invent a brand new sport that's never been thought of? Do you want to take a sport you're already familiar with and change it for playing in space?

### **PLAN**

Now that you have a list of ideas, narrow it down to one or two ideas to develop. What can each team member contribute? Start drawing out or acting out your ideas. What questions would you ask an expert about microgravity and whether or not your idea would work in weightlessness? Ask your instructor to approve your plan before you start.

### **CREATE**

Start a draft of your game instructions. See the Video Criteria and Rubric for a list of requirements. Use your instructions to think about how you would demonstrate, or act out the game for someone to see how it is played.

### **EXPERIMENT**

Now that you have a draft of your Game Instructions and demonstration, share them with somebody who is not on your team. Can they understand your game? Is there enough information for them to play it? Make a list of any questions they had about your game.

### **IMPROVE**

Based on the questions you got from your instructions and demonstration, what changes can you make so your game is more easily understood by someone else? After you've made the improvements, it's time to shoot your video to send to NASA to go along with your Game Instructions.