

# **Space Camp Lesson Overviews FY-2018**

## **Apollo History**

Covering the Apollo Program from its origins to its completion, this briefing shows the progression that took America to the moon. Both the United States and Soviet Union were reaching for the moon. While the Soviet Union focused on continuing their many achievements, the United States worked on perfecting methods. This perfecting applied to not only to astronaut training and modifying current technology but developing new technology for the sole purpose of landing on the moon. The Apollo Program is the perfect example of modern America's determination to set a goal and achieve it.

## **Astronomy Night – Destination Constellations**

This presentation is a basic introduction to constellations in the night sky. Story telling will be used to engage trainees as they are taken on a guided tour of celestial objects. Emphasis will be on the visible circumpolar and zodiac constellations. In addition, they will make telescope observations of a select planet or the moon.

## **Earth from Space**

In this activity, the trainees will be introduced to the concept of satellite earth imaging. They will use their own skills to decipher images and determine what is going on in the picture as well as recommend a course of action in response.

## **ECLSS**

How do astronauts get water on the ISS? Trainees will learn how we can make dirty water potable. We will discuss why this is imperative in our journey to Mars. Trainees will be divided into teams of four to create their own water filtration system.

## **Expedition Living**

What is an astronaut's day like in space? Trainees will explore how astronauts do the same things they do every day but with some significant differences due to microgravity. Also, trainees will understand that the work done on the ISS is the first step to our journey beyond LEO. This provides a foundation for the ECLSS activity, which comes later in the trainee's schedule.

## **Journey to Mars**

Trainees will discuss the hardware and mission destinations of NASA's past spacecraft: the Saturn V and the STS. Lessons learned and technology used from

these past missions are being used to create NASA's next great launch vehicle - the SLS - that will ultimately send human beings to Mars.

### **Mars Base Challenge**

Mars Base Challenge is designed to establish the trainees' knowledge for future exploration opportunities in space and inspire them to think about what requirements may be needed for a successful colonization of Mars.

### **Mars Probe Design Challenge**

Trainees will work as a team to design and build a Mars probe that meets specific size and supply constraints and that withstands a 1-meter Drop Test. The probe must carry at least two scientific instruments that deploy upon launch.

### **Mercury-Gemini History**

This briefing details the story of unmanned and manned space flight during the United States' Mercury and Gemini Program.

### **Mission Patch**

Each mission crew, beginning in the Gemini program, was tasked with creating a mission patch that represented them as a crew, individuals, and that also represented the mission they were undertaking. In this activity, trainees will work together to come up with ideas for a mission patch that represents themselves as a team, what's important to the trainees on the team, and their week at camp together.

### **Model Rocketry**

Trainees will be introduced to the parts of the Estes Eagle rockets and discuss factors that influence stability of flight. Students will construct and launch their rockets and calculate the height of their rocket flight.

### **N.E.T.C.**

N.E.T.C. is a water activity designed to help trainees understand the concept of neutral buoyancy and to promote teamwork and communication skills in Space Camp trainees.

### **Parachute Design**

Parachutes have played a part in the safe return of objects to Earth since the beginning of the space program and will continue to play a major part in the future of spaceflight. This hands-on activity will let trainees explore and compare different types of parachutes by building one and dropping it from a height.

**Planet Quest**

The purpose of this briefing is to introduce trainees to the search for exoplanets (planets beyond our solar system), methods used to detect them, current and future missions, and learn about possible habitable or “Earth-like” planets.

**Space Shuttle History**

With 135 flights over 30 years, the Space Transportation System (STS), or space shuttle, was the longest running American space program. This history briefing will highlight the achievements, contributions, tragedies, and lessons learned during this era of U.S. spaceflight history.

**Stars and Constellations**

Trainees will hear and discuss a story about the life cycle of a star from the star’s point of view. The presentation will be accompanied by illustrations of each stage. After the main sequence is complete, variations can be explored to find out what causes variations in stars.

**Strange Science**

Strange Science is designed to engage trainees using simple scientific experiments that demonstrate space exploration concepts.