



## Summer Learning Institute Program Course Outline

### **Across the Universe**

Explore the wonders of the cosmos as we embark on a journey through the universe. The campers will be transformed into young astronauts as they learn about the night sky, our own Sun, planets in the Solar System, deep sky objects, and spaceflight. They will gain an understanding of the tools astronomers and scientists work with, and they will have any opportunity to view the sun safely through our specially designed solar telescopes. As part of our Planetarium 2.0 campaign, this cosmic class will feature the innovative technologies found in our upgraded Lohman Planetarium facility that will provide an immersive and unforgettable experience for these young astronauts.

All program classes are organized to address the following aspects:

- STEM/STEAM Education.
- Cultivate an interest in Art, Science, and History.
- Continued knowledge and comprehension regarding Volusia County School Standards.
- Develop interpersonal skills such as teamwork and problem solving.
- Foster curiosity and imagination of the world around us.

**Pre-requisites:** None

**Software/Materials/Books/Media:** Handouts and materials provided in class.

*Exhibits/Galleries that correspond with camp:*

- Lohman Planetarium
- Planetarium Lobby
- Courtyard for safe solar viewing

### **Course Objectives:**

*Students will:*

- *Learn physics fundamentals.*
- *Learn how to navigate the night sky.*
- *Understand the different objects found in the Solar System.*
- *Learn about deep sky objects such as nebulae, galaxies, star clusters, black holes, and exoplanets.*
- *Learn about the Sun and how to view it safely.*
- *Learn about spaceflight and rocketry.*

## 5 Day Course Outline Example:

*Schedules must consider, lunch time, snack time, free play, and lessons in the gallery. All movies/shows must be approved by MOAS staff prior to viewing.*

- Day One:
  - Introduction
  - Notes: Space, Gravity, Rotation/Revolution
  - Daily night sky exploration (each day the class will go over objects in the night sky in the planetarium to build on their knowledge)
  - Hands-on demonstration of rotation/revolution/gravity
  - Utilize gravity well to go over basics of physics in space
- Day Two:
  - Notes: Star, Planet, Moon
  - Daily night sky exploration
  - Safe solar viewing with solar telescopes
  - The Sun, Our Living Star planetarium show
  - Create your own planets with Styrofoam and paint
- Day Three:
  - Notes: Solar System, Meteors, Asteroids, Comets, Exoplanets
  - Daily night sky exploration
  - Edge of Darkness planetarium show (about asteroids, comets, dwarf planets)
  - Hands-on MOAS meteorite collection demonstration
  - Create an asteroid with molding clay
  - Create a comet with dry ice
- Day Four:
  - Notes: Nebula, Star Cluster, Stellar Death, Black Hole, Galaxy
  - Daily night sky exploration
  - Unveiling the Invisible Universe planetarium show (about how we use light to study objects we can't see)
  - Recreate nebula from Hubble or JWST using paint
  - Scale of the universe demonstration through MOAS facility
- Day Five:
  - Notes: Rocket, Spacecraft, Rover, Telescope
  - Daily night sky exploration
  - Big Astronomy planetarium show (about the largest telescopes on Earth)
  - Telescope demonstration with MOAS collection
  - Create your own paper rocket and launch outside
  - Build a model of a spacecraft, rover, or observatory with Legos

**Assessment:**

*Student's ability to demonstrate the following:*

1= Below Expected Outcome

3= Meets Expected Outcome

5=Exceeds Expected Outcome

<b>The Student Has:</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Demonstrated ability to recognize astronomical terms.					
Demonstrated basic knowledge of universe.					
Demonstrated recognition of important space excursions.					