

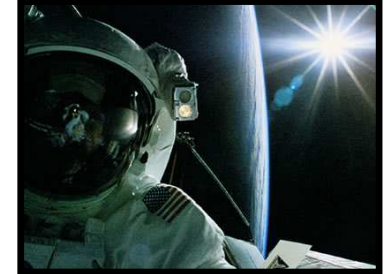
# ASTRONAUT SCHOOL *for Middle Schoolers!*



week1>>  
**Rocket Science**



week3>>  
**Space History**

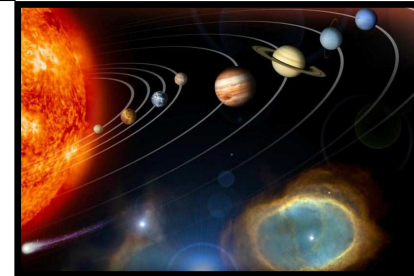


week5>>  
**Astronauts**

week2>>  
**Aeronautics**



week4>>  
**Universe**



## SYLLABUS

Week	Date	Theme	Design/Build Project	Learning Objectives				Watch at home (Hulu.com)
				<i>Physical Science</i>	<i>Math</i>	<i>Engineering</i>	<i>Communication</i>	
1	17 <sup>th</sup> April	<b>Rocket Science</b>	Alka-Seltzer Rockets	Newton's Laws of Motion; Chemical reaction rates	Rocket design calculations	Objective-based system design	What makes a rocket work?	<i>Cosmic Journeys: Voyage to Pandora</i>
2	24 <sup>th</sup> April	<b>Aeronautics</b>	Paper Aerospace Engineering Challenge	Aerodynamic forces and theory of flight	Aircraft performance calculations	Objective-based system design	Why do aircraft fly?	<i>Nova: Battle of the X-Planes</i>
3	1 <sup>st</sup> May	<b>Space History</b>	Future Human Spaceflight Mission	Orbits and satellites	Orbital mechanics calculations	System design and politics	Why explore space?	<i>Nova: Astrospies</i>
4	8 <sup>th</sup> May	<b>Universe</b>	Planetary Space Probe	Contents of the Cosmos; mass, weight and apparent weight; alien life	Scientific notation; mass and weight; the Drake eqn.	Systems engineering of a space probe	Where would you go? + Your questions for an astronaut!	<i>Nova: Mars, Dead or Alive?</i> <i>Cosmic Journeys: The Search for Earth-Like Planets</i>
5	15 <sup>th</sup> May	<b>Astronauts</b>	Space Suit	How to sustain life beyond the Earth	Space suit design calculations	Systems engineering of a space suit	Astronaut Q&A	<i>Nova: Hubble's Amazing Rescue</i>



week1>>

### **Rocket Science**

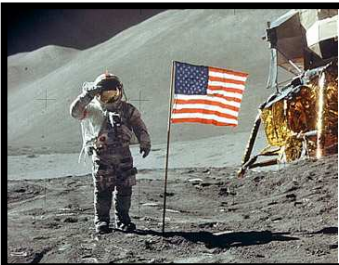
Join as we kick off Astronaut School with a BANG! We'll learn the science of how rockets work, including Newton's Laws of Motion and rocket design principles. Then in the engineering challenge, you'll get a chance to design, build, and LAUNCH your very own Alka-Seltzer powered rocket! Optional homework each week will build upon what we've learned in class.



week2>>

### **Aeronautics**

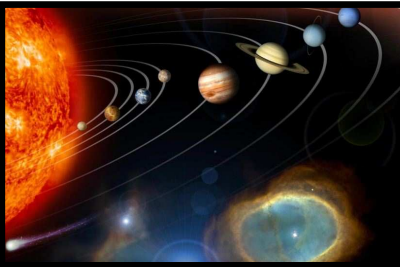
The first step towards spaceflight was mastering flight through our own atmosphere. This week we learn all about aircraft: how they were developed, how they work, and how they are designed. To apply your knowledge, you'll design your own paper airplane to compete in our Paper Aerospace Engineering Challenge!



week3>>

### **Space History**

This week we'll learn about the real-life thriller that was the Space Race. How did it all start? Who was the first human being in space? And on the moon? Who were the unsung heroes of this story? We'll look at the impact of those space achievements on our everyday life, and you'll also look to the future to design your very own human spaceflight mission.



week4>>

### **Universe**

Step out of our speck-within-a-speck and join us on a grand tour of the Universe! We'll tour the planets, exotic moons, the stars and galaxies beyond our own. Using the Drake equation we'll ask the question: are we alone in the Universe? And just like the scientists and engineers at NASA, you'll have a shot at designing your own planetary space probe!



week5>>

### **Astronauts**

As our grand finale, you will get your chance to meet a real NASA Astronaut! Professor Jeffrey Hoffman flew on the Space Shuttle five times and helped save the Hubble Space Telescope. We'll learn about what it takes to become an astronaut, what they do, and the team they work with. You'll design your own space suit, and then officially graduate from our Astronaut School!