



# the stars challenge

## WINTER 2019

inspiring future innovators

### KEY DATES

December 21:  
Applications due

January 2:  
Notification  
of acceptance  
by e-mail

January 7:  
Tuition is due

Week of January 7:  
Classes start

Apply on-line at  
[www.starschallenge.org](http://www.starschallenge.org)

### Mission

The Stars Challenge is a science enrichment program for top 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> graders that began in 2006.

Our goal is to nurture students' passion and curiosity about science. We start with excellent teachers who lead creative, hands-on classes. Working in small groups, students tackle real world problems and see how they can make a positive impact on society through science and technology.



Looking closely at objects in nature, students find patterns everywhere.

### Winter 2019 Courses

For 6<sup>th</sup> graders, we're offering **Is It Science Or Magic?** by Ms. Aimee Babbin. Have you ever wondered why Jello jiggles? Why oil floats on water? Through observing, questioning, and experimenting, students will learn how chemistry makes magic.

**Patterns in Nature**, a course for 6<sup>th</sup> and 7<sup>th</sup> graders, will once again be presented by Mr. Roche and Ms. Gross. They will be assisted by an exceptional group of guest educators who will provide students with a glimpse into the molecular structure of DNA, wave patterns of physics, the unique properties of water in chemistry. Students will get an introduction to many different sciences.

For 7<sup>th</sup> and 8<sup>th</sup> graders, we're offering **Explore Biotechnology**. Dr. Dina Ellsworth will lead this lab intensive course that will give participants hands-on training in the use of the

most common tools and technologies used in biotechnology. Mr. Coe will be offering **Explore the Universe** to 7<sup>th</sup> and 8<sup>th</sup> graders who are curious about the larger universe we live in.

Each week, 7<sup>th</sup> and 8<sup>th</sup> graders in Mr. Valente's **Explore, Imagine and Build** course will explore a new principle of science. You'll learn why roller coasters are so much fun, why you can't live on a planet ten times the size of earth, and how to protect your home in case of tornados or electrical storms.

For 7<sup>th</sup> and 8<sup>th</sup> graders, we're offering **Coding and Robotics** by Mr. Chris Hanas. It will be a hands-on adventure into the worlds of computing and robotics. You will be exposed to fundamental coding methods which you will



Patterns are everywhere. We'll challenge you to explore in the lab, in the sky and in the field.

use to control a VEX robot and an Arduino prototyping board. You need to be curious and interested in exploring.

More detailed information can be found on our web site, [www.starschallenge.org](http://www.starschallenge.org). Send us email ([mtroche@starschallenge.org](mailto:mtroche@starschallenge.org)) or call. (732-609-2797) if you have any questions.

### Winter 2019 Logistics

Classes will meet for 10 weeks beginning January 8 or 9. Classes meet from 6 p.m. to 8 p.m. Tuition is \$500. Some needs-based scholarships are available. Please see our web site for more details and to use our on-line application.

### **IS IT SCIENCE OR MAGIC - 6<sup>TH</sup> GRADE**

Have you ever wondered why Jello jiggles? Why oil floats on water? Why ice cream won't freeze until it's below zero degrees? Why bubbles are spherical not cubic? These phenomena aren't magic – they are all explained by chemistry! Through observing, questioning, and experimenting, students will investigate the field of chemistry. Join us for this exciting course and learn how chemistry makes magic. This course will be taught by Ms. Aimee Babbin of High Technology High School. The class will normally meet on Tuesday evenings from 6 to 8 at High Technology High School except the first evening will be Wednesday, January 9, from 6 to 8 pm.

### **PATTERNS IN NATURE - 6<sup>TH</sup> and 7<sup>TH</sup> GRADE**

Have you ever found yourself intrigued by the ripples in sand, the spirals in a seashell, or the symmetry of a butterfly's wings? From fractals to spirals, snowflakes to sound waves, grains of sand to the wings of a butterfly, patterns in nature surround us. The course will welcome esteemed scientists and teachers at each class meeting, providing students with the opportunity to investigate patterns in astronomy, biology, chemistry, physics, and other branches of science. The course will be led by two High Technology High School faculty members, Mr. Michael T. Roche and Ms. Sarah Mulhern Gross. The class will normally meet on Tuesday evenings from 6 to 8 at High Technology High School except the first evening will be Wednesday, January 9, from 6 to 8 pm.

### **EXPLORE, IMAGINE AND BUILD - 7<sup>TH</sup> and 8<sup>TH</sup> GRADE**

While watching your favorite television show, a news alert flashes a warning about possible tornadoes or electrical storms sweeping across your town. How will you protect yourself, your family and your house? Why are roller coasters so much fun? Why can't you walk on a planet ten times the mass of the Earth? You'll find out by taking this course. Each week you'll investigate and discover the rules that govern one or two physical principles. Then you'll explore the ideas yourself by creating and building devices that illustrate these ideas. You will take these devices home to amaze your friends, family or teachers or use them to compete in class competitions. The winning team gets tasty donuts! This course will be taught by Mr. John Valente, physics teacher at the Marine Academy of Science and Technology (MAST). The class will normally meet on Tuesday evenings from 6 to 8 at High Technology High School except the first evening will be Wednesday, January 9, from 6 to 8 pm.

### **EXPLORE BIOTECHNOLOGY - 7<sup>TH</sup> and 8<sup>TH</sup> GRADE**

Explore Biotechnology is a lab intensive course that will give participants hands-on training in the use of the most common tools and technologies associated with the field of biotechnology. Students will learn and experiment with advanced, cutting-edge techniques such as DNA extraction, Polymerase Chain Reaction (PCR), and gel electrophoresis, which scientists frequently apply to the medical and agricultural fields. This course will be taught by Dr. Dina Ellsworth of High Technology High School. The class will normally meet on Tuesday evenings from 6 to 8 at High Technology High School except the first evening will be Wednesday, January 9, from 6 to 8 pm.

### **EXPLORE THE UNIVERSE - 7<sup>TH</sup> and 8<sup>TH</sup> GRADE**

"I learned that you can never dream, think, or imagine too big when it comes to the universe. With all that is unknown in our vast, vast universe, at least one of my crazy ideas is bound to be real." This quote by a former student captures the essence of this astronomy course. You'll ask the questions that have puzzled you as you look into the vastness of the night sky. You'll find as you discover some answers, even more questions will arise. This course will be taught by Mr. Marc Coe, science teacher at Cedar Drive School in Colts Neck. Classes will meet on Tuesday evenings from 6 to 8 at Cedar Drive School beginning January 8.

### **CODING AND ROBOTICS - 7<sup>TH</sup> and 8<sup>TH</sup> GRADE**

This course will be a hands-on adventure into the world of coding and how those concepts relate to robotics. You will be exposed to fundamental coding methods using both MIT Scratch and Python. We will then make use of those skills to control an Arduino prototyping board, various VEX robotics sensors, and a VEX robot. Finally, you will be able to use the skills learned to develop your own Scratch, Python, Arduino or VEX project. This course will be taught by Mr. Chris Hanas of High Technology High School. The class will normally meet on Tuesday evenings from 6 to 8 at High Technology High School except the first evening will be Wednesday, January 9, from 6 to 8 pm.