the stars challenge

WINTER 2016

inspiring future innovators

KEY DATES

December 18:
Applications due

December 29:
Notification of acceptance by e-mail

January 4:
Tuition is due

Week of January 4:
Classes start

Apply on-line at www.starschallenge.org

Mission

The Stars Challenge is a science enrichment program for top 6th, 7th, and 8th graders hosted by Monmouth University. Our goal is to involve more middle school students in science and technology. Developing top notch scientists, engineers, and mathematicians is critical to maintaining America's lead in technology and innovation.

Students performing a flame test during a Forensics lab.

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 though science and technology.

Winter 2016 Courses

For 7th and 8th graders we're offering **Explore Biotechnology**. Mr. Fusco will lead this hands-on experience that will take students on a fantastic voyage around the laboratory. Each week we will explore how living organisms are used to make our lives easier. This is the same class that was offered Fall 2015.

Ms. Hui will be teaching her wildly successful **Forensics** class for 6th grade investigators. If you love solving mysteries, this class is for you.

Patterns in Nature, a course for 6th and 7th 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 various specialized areas of science. From the molecular structure of DNA, to wave patterns of physics, to the unique properties of water in chemistry, students will get an introduction to many different sciences via patterns in the natural world around them.

Mr. Coe will be offering **Explore the Universe** to 8th graders who are curious about the larger universe we live in. Ever wonder if there's life somewhere out in the vast universe?

Each week, 7th and 8th 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.

More detailed information can be found on our web site, www.starschallenge.org. Send us email (chappell@starschallenge.org) or call. (732-530-1061) if you have any questions.

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

Winter 2016 Logistics

Classes will meet on the campus of Monmouth University for 10 weeks beginning January 5. 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.

COURSES

TO APPLY visit www.starschallenge.org

FORENSICS - 6TH GRADE

Did you ever wonder how investigators solve crimes? Do you enjoy watching episodes of CSI? Well, this course is for students who love solving mysteries. Each session will provide students an opportunity to build investigative skills and work like a crime scene investigator. Students take active roles as characters in the mysteries. Student-sleuths will analyze physical evidence and debate possible hypotheses. We will learn how to use evidence to reconstruct a crime scene. Labs will show students how to analyze lipstick samples, fiber samples, and mystery powders. If mysteries have always intrigued you, and you would rather be actively solving them than just reading about them, then this forensics course is perfect for you. This course will be taught by Ms. Shirley Hui, science teacher at Cedar Drive School in Colts Neck. Classes will be on Monday evenings from 6 to 8 at Monmouth University starting January 4.

PATTERNS IN NATURE - 6TH and 7TH 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 Patterns in Nature course uses natural patterns, from Fibonnaci to chaos, to introduce students to different branches of science. 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 culminate in a student-directed project drawing on the areas that are of most interest to you. The course will be led by two High Technology High School faculty members, Mr. Michael T. Roche and Ms. Sarah Mulhern Gross. Classes will meet on Monday evenings from 6 to 8 starting January 4.

EXPLORE, IMAGINE AND BUILD - 7TH and 8TH 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? Why would space travelers be crushed if a spaceship accelerated to almost the speed of light (even though you see this all the time at the movies)? How does a karate expert break boards with their hands? 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). Classes will meet on Monday evenings from 6 to 8 beginning January 4.

EXPLORE BIOTECHNOLOGY - 7TH and 8TH 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 is the same course that was taught Fall 2015.) This course will be taught by Mr. David Fusco of Biotechnology High School. Classes will meet on Tuesday evenings from 6 to 8 beginning January 5.

EXPLORE THE UNIVERSE - 8TH 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 beginning January 5.

MONMOUTH UNIVERSITY