



2019 Sustainability -focused S.T.E.M. Summer Program Jackson Memorial High School

2019'S SUSTAINABILITY S.T.E.M. SUMMER PROGRAM

SOME HIGHLIGHTS FROM PAST SESSIONS

It's Chemistry

The summer program starts off with an exploration of elements and compounds. A brief introduction to rocks and minerals, rock collecting and crystal formation act as an unusual approach to the introduction into nutrition and healthy lifestyle actions steps. There's a lot of truth in the phrase, "*you are what you eat.*" In fact, what you eat starts with the chemistry that existed within your food item(s) as they were grown. We look at plant nutrients from a recycling perspective in which we investigate composting and the analysis of some of our own compost nutrients. Creating models of some of our basics macromolecules found in our food items one can quickly see the processes we talk about in science class come to life before our very eyes during some of our very own hands-on experiments.

It's Engineering Solutions

A focus on sustainability driven indoor growing devices and systems is taught through the creation of such items made from recyclable food containers and common household materials. The discussion begins with an investigation into common large scale growing operations compared with the trend in backyard organic gardening practices. Creation of indoor systems that limit the use of pesticides while

fully controlling the variables that outdoor growers struggle with (including droughts and extreme temperature changes). The newest forms of indoor growing include hydroponics and something new called aquaponics. Yes, both use large amounts of water but only one uses your pet fish or food fish to get the job done.

It's mostly about Biology

Everything we discuss or create revolves around living organisms. Whether it be the recycling of nutrients or how to grow the best tomato, we're talking about living organisms. We explore the natural forms of genetic modification that can be accomplished through selective breeding via cross-pollinations, cloning plants or a topic such as grafting multiple species of apples to a single tree. Deep exploration into soil health and gardening techniques will have us busy in the school's greenhouse. Learn about healthy plants to eat and the differences between store bought and home grown vegetables. Learn about plant interactions that sound too impossible to be true. We end with an investigation into Earth's most valuable and vulnerable species.



Alternative growing methods

A focus on sustainability driven indoor growing devices and systems is created through the creation of such items from recyclables and common materials.



Aquaponics

We build mini-hydroponics systems to take home and a large scale aquaponics system during each Sustainability-focused STEM Summer Program.

Who should attend?

For Summer Session I July 22-31 (excludes Fridays). Rising students into grades 9, 10 or 11 with an interest in biochemistry, ecology, nutrition, sustainability or engineering/systems design.

Summer Sessions will take place Monday through Thursday, then Monday - Wednesday

- July 22, 23, 24, 25, 29, 30, 31
- Times: 8:00am - 2:00pm

More details below:

Summer Session I (starting July 22nd)

Open to our slightly older and advanced students (grades 9-11), we will strive to solve real life issues by creating items that can help change current problems in food production systems and nutrition. This cohort will begin with the basics of chemistry and move into water and soil chemistry. We will explore macromolecules by extracting DNA, and making molecular models. We will discuss symbiotic relationships and look at Earth as the giant interconnected system of recycling that it is. And, we will create a composter and compost the trash we generate during our sessions.

We will work both outside and inside. This cohort will also build an aquaponics system from scratch along with many other interesting devices. Blueprint to the assembly of the system, we do it all. We consume vegetables grown in our greenhouse. We'll also break out the



*Sustainable Jersey Grant-winning
Aquaponic design by Gary Antonelli,
Sustainability-focused STEM Summer
Program Instructor.*

microscopes and looking under the microscopes, you'll be amazed at what we find in our water samples. Finally, we'll unravel common myths about diets, look at nature's examples of balanced systems as we explore ecosystems found in and around our school. All sessions end back at our school for parent pick-up at 2:00 p.m. sharp leaving plenty of time to enjoy the summer days!

SIGN-UP AND REGISTRATION FEE

Use the Jackson School District webpage to register using the Summer Programs tab. All students MUST be registered as a current Jackson School District student and completed a full year in the 2018/2019 school year.

Registration for each summer session is \$250 (includes a \$50.00 non-refundable registration fee. All fees are non-refundable after July 1, 2019)

Deadline for sign-up is June 15, 2019.

Students should bring something for lunch daily.

Students must be dropped off and picked-up by legal parent of guardian on file.

Seats are limited and assigned on a first come first served basis. Reserve your seat soon!

No refunds are granted after the program start date.

Students must follow directions and school district policies listed online on the district website. Students who do not adhere to these guidelines will be dropped from the program without refund.

Students will be assembling paper, plastic, PVC and wooden structures requiring the light use of tools: cordless screwdrivers, hammers, and paint. Safety equipment will be supplied and its use is mandatory. Food will be consumed during our sessions so please be sure to notify us of any known food allergies.

Be sure to remit: Registration Form, Safety Contract & Payment.

Submit registration form and payment to:

Michele Shpak
C/O Goetz Trailer I
835 Patterson Road
Jackson, NJ 08527