



Edison Global STEM Challenges Program



2019-2020
1st Quarter

9th GRADE STUDENTS WORK ON TEAM BUILDING SKILLS AT HEMLOCK THIS FALL

Welcome to the 2019-2020 School Year with Global STEM!

Our new school year is off and running, and we have had a great first quarter. Our 9th grade cohort has been adjusting to the teaching and learning style of Global STEM and our 10th and 11th grade cohorts are working hard with the new science and math topics. We are thrilled to welcome Ms. Hertema (9th grade science) and Mr. Fox (10th grade science) to our Global STEM instructional team!

Cohort News and Updates

Our 9th grade cohort started the year strong and have embraced every task we put in front of them. They have been learning from their instructors, and also from students in the 10th and 11th grade cohort. The year started with team building and adjusting to the norms of the program. Please keep in mind that we recognize this adjustment and accommodate this by weighing the first quarter less in the final grade calculation. This quarter the students designed a microscope for field identification of pathogens on plant life. Students created excellent layouts and microscope prototypes. Ask your child about the design process they are using in Global STEM!

"I am thoroughly enjoying my time with both the staff and students. I really appreciate the unique approach to teaching and learning in this program. Being able to collaborate across technology and math subjects is also beneficial and allows students to apply the content they are learning to the projects." Ms. Hertema



"My experience so far has reinvigorated my love of teaching. Everyone in the program is united in our goal of continued learning & exploration of the intersections between math, science, engineering, and real world issues. I am excited to continue teaching and learning from my students and colleagues!" Mr. Fox

9th – Grade STEM Course Content: Food Theme

Global STEM Unit	Main Mathematics Content	Main Science Content	Main Engineering/ Technology Content
Design a room plan for the unique, multi-classroom setting of the Global STEM course.	<ul style="list-style-type: none"> • Area • Composite Figures • Scale • Ratios • Logic, proofs 	<ul style="list-style-type: none"> • Nature of science • Observation & inference • Scientific investigation and data representation 	<ul style="list-style-type: none"> • Problem definition • Criteria & constraints • Design alternatives • Technical drawing • Design process communications
Design a portable microscope for field identification of pathogens on plant life.	<ul style="list-style-type: none"> • Proportions • Magnification • Angles • Ray Diagrams • Growth and decay functions 	<ul style="list-style-type: none"> • Macroscopic and microscopic observation • Classification of living things • Cell theory • Lenses and refraction 	All of the above plus: <ul style="list-style-type: none"> • Stakeholders • Computer assisted drawings • Design evaluation

In **10th grade**, students have continued learning about the design process, putting together design briefs, and developing a process to work efficiently in a team. The year started out with students creating a water filtration device to be used at a specific site. Our students are also working on a water quality communication tool to support a local stakeholder in the Chesapeake Bay. Join us December 6th from 10:50 a.m. – 12:20 p.m. to hear about the projects. RSVP information is in the parent resource section below. Ask your child about efforts currently underway to protect the Chesapeake Bay!



Sophomores prepare for a full day of scientific exploration with the Chesapeake Bay Foundation on the Occoquan River.

10 th – Grade STEM Course Content: Water Theme			
Global STEM Unit	Main Mathematics Content	Main Science Content	Main Engineering/ Technology Content
Create a water filter to be used a specific site in India, Canada, Australia, or Kenya.	<ul style="list-style-type: none"> Symbologic arguments Deductive reasoning Geometric similarity Systems of equations 	<ul style="list-style-type: none"> Chemical properties Atomic theory Toxicity and LD-50 Periodic table Radioactive decay Bonds 	<ul style="list-style-type: none"> Full design process (problem definition, design exploration, design optimization, communication) Field report analysis Reverse engineering a pump
Design a water quality communication tool to support a local stakeholder in the Chesapeake Bay.	<ul style="list-style-type: none"> Functions Logarithms Exponential Functions Inverse functions Asymptotes Statistical T-tests 	<ul style="list-style-type: none"> Chesapeake Bay data set analysis Chemical cycling Nitrogen cycle Temperature, dissolved gases 	<ul style="list-style-type: none"> Full design process Market research Stakeholder identification Coding a digital communication tool



Students identify and categorize invertebrates during a field trip on the Occoquan River.



11th grade Global STEM students dressed as their GSCP teachers for Halloween!

The **11th grade cohort** was excited to be back together and jumped right into designing a tidal-driven electric generator to create a power source for a specific region. They are quickly putting their math, science, and engineering skills to the test. Please join us December 13th from 1:20 p.m. – 2:55 p.m. to learn more about the devices each group has developed. See information below about how to RSVP for this event. Ask your child to explain how tidal waves create power!

11 th – Grade STEM Course Content: Energy Theme			
Global STEM Unit	Main Mathematics Content	Main Science Content	Main Engineering/ Technology Content
Design a tidal-driven electric generator	<ul style="list-style-type: none"> -Trig functions -Unit circle -Polar graphing 	<ul style="list-style-type: none"> -Newton’s law of - Gravitation & tides -Wave properties -Faraday’s Law -Circuits -Motors -Power grid 	<ul style="list-style-type: none"> -Full design process -Alternative energy technologies -Evaluating construction sites

Global STEM Spirit Wear Coming Soon!

Be sure to watch to flyers coming home soon for Global STEM Spirit Wear. We will have t-shirts, sweatshirts, polo shirts, sweatpants, and more. We can’t wait to see our students and families representing Global STEM!

Parent Resources

- Student Presentation Dates:** We invite all parents and guardians of Global STEM students to come visit during student presentation days. You will get to hear about the project your child worked on, and also hear from other teams about their work. This is a great opportunity to see your child at work and learn more about their progress in the program! Be sure to RSVP for these events by emailing Ginger White (vlwhite@fcps.edu).
 - 9th Grade Cohort** – 1/17, 3/6 - 10:50 a.m. – 12:20 p.m.
 - 10th Grade Cohort** – 12/6, 3/20, 6/3 - 10:50 a.m. – 12:20 p.m.
 - 11th Grade Cohort** – 12/13, 3/27, 5/29 - 1:20 p.m. – 2:55 p.m.
- We want to hear from you:** If you have comments or feedback about the program, please complete the short Google Form found at <https://goo.gl/forms/Xu1bkEzsY2AoIP42>. We look forward to continuously improving our program through feedback from all stakeholders and educational research in best practices. Thank you.
- Ask Your Student:** The best way to learn content is to teach others. Have your student explain current concepts and projects to you. As their level of understanding increases you should see them appear more comfortable discussing ideas and concepts and hopefully you will see them excited about their learning!
- 9th and 10th Grade First Quarter:** We understand that transitioning to high school can be tough and adding the transition to a new teaching and learning style is also a challenge. To allow students time to make this adjustment the first quarter of the 9th and 10th grade year in Global STEM classes is only weighted 10% for the final course grade. If you have questions about this or your student's progress, please reach out to your student's teacher(s) or Dr. Ketchledge.

Important Dates:

- 11/27-11/29 – Thanksgiving Holiday – Schools and Offices Closed
- 12/6 – 10th Grade Presentations
- 12/13 – 11th Grade Presentations
- 12/23 – 1/3 - Winter Break – No School
- 1/8 – Global STEM Senior Seminar
- 1/11 – GSCP Open House 11:00 a.m.
- 1/17 – 9th Grade Presentations
- 1/29 – GSCP Open House and Parent Night 6:30 p.m.
- 2/19 – Draper Prize Winner Guest Speaker



Contact the Edison Global STEM Challenges Program Instructors:
[Mr. Patel](#), [Mr. Canales](#), [Mr. Chirinos](#), [Mrs. Drew](#), [Dr. Besterman](#),
[Ms. Dresen](#), [Ms. Hertema](#), and [Mr. Fox](#)
 Program Administrator: [Dr. Ketchledge](#) Principal: [Pamela Brumfield](#)

Thank you to all of our GSCP parents for joining us at Back to School Night. It was great to see all of you!



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