Edison Global STEM Challenges Program

2018-2019
1st Quarter

Welcome to the 2018-2019 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. Dresen (math) and Ms. Storey (science) to our Global STEM instructional team!

9th Grade Cohort

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. Students worked with their first team to design a classroom that could function in multiple capacities to meet the needs of the students and teachers. Their next team designed a microscope for field identification of pathogens on plant life. Students created excellent layouts and microscope prototypes.

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.	• Area • Composite Figures • Scale • Ratios • Logic, proofs	• Nature of science • Observation & inference • Scientific investigation and data representation	• Problem definition • Criteria & constraints • Design alternatives • Technical drawing • Design process communications
Design a portable microscope for field identification of pathogens on plant life.	• Proportions • Magnification • Angles • Ray Diagrams • Growth and decay functions	• Macroscopic and microscopic observation • Classification of living things • Cell theory • Lenses and refraction	All of the above plus: • Stakeholders • Computer assisted drawings • Design evaluation

Students learned about the Mars rovers and other interesting topics with NASA Space Technology Mission Directorate, Dr. Prasun Desai, who came and spoke to all three of our cohorts.

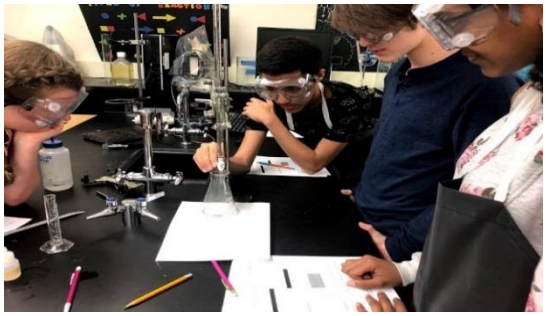
In **10th grade,** students have continued learning about the design process, putting together design briefs, and developing a process to work efficiently in a team. The year started out with students creating a water filtration device to be used at a specific site taking into consideration the geographic and economic conditions of that area of the world. Students then designed a water quality communication tool to support a local stakeholder in the Chesapeake Bay.

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

10th – 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.	• Symboloic arguments • Deductive reasoning • Geometric similarity • Systems of equations • Properties of circles • Transformations • Exponential decay • Riemann Sums	• Chemical properties • Atomic theory • Toxicity and LD-50 • Periodic table • Radioactive decay • Bonds	• 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.	• Functions • Logarithms • Inverse functions • Asymptotes • Statistical T-tests	• Chesapeake Bay data set analysis • Chemical cycling • Nitrogen cycle • Temperature, dissolved gases	• 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.



Students work with teammates to complete investigations.

The **11th grade** cohort had no trouble getting back into the routine and started the year strong. They first worked on designing a tidal-driven electric generator to fill a need in a specific area and we could certainly see their growth and knowledge through their presentations of these devices. Next, they designed a portable device charger and are excited to share their ideas and prototypes.

11th – 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	-Trig functions -Unit circle -Polar graphing	-Newton's law of - Gravitation & tides -Wave properties -Faraday's Law -Circuits -Motors -Power grid	-Full design process -Alternative energy technologies -Evaluating construction sites

Our team of students won First Place at the Boeing Business Case Study Competition!

Parent Resources

- **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/Xu1bkE2sY2AoIPP42. We look forward to continuously improving our program through feedback from all stakeholders and educational research in best practices. Thank you for your feedback and support!

- **Parent Volunteers:** We are compiling a list of parents who are interested in being emailed when there are opportunities to support the program by sending in supplies, assisting with events, chaperoning field trips, etc. Please complete this form if you would like to receive these emails - https://goo.gl/forms/Bk9ovR7YvGaj1Hwr2.

- **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:

- 11/15 – First quarter honor roll recognitions
- 11/16 – 10th Grade Presentations
- 11/19 – 11th Grade Presentations
- 11/21-11/23 – Thanksgiving Holiday – Schools and Offices Closed
- 12/14 – 3 hour early release
- 12/18 – 10th Grade Cohort Biology SOL
- 12/19 – 9th Grade Presentations
- 12/20 – 10th Grade Cohort Geometry SOL
- 12/24 – 1/4 - Winter Break – No School

Student ambassadors plan exciting events for our new school year!

Contact the Edison Global STEM Challenges Program Instructors:
Mr. Patel, Mr. Canales, Mr. Chirinos, Mrs. Drew, Dr. Besterman, Ms. Dresen, and Ms. Storey
Program Administrator: Dr. Ketchledge **Principal:** Pamela Brumfield

Follow Us on Social Media

twitter @EdisonSTEMprg

Instagram EdisonSTEMprg

Students check out their new crops resulting from their greenhouse projects.