



# Edison Global STEM Challenges Program



2018-2019  
May 2019

## Third Quarter Updates!

Third quarter went by very quickly and students (and teachers) very much enjoyed their spring break! While students accomplish amazing things in this program every day, we are also beginning to receive more data that this integrated instructional model is extremely effective in promoting sustained learning and understanding. See the PSAT and SAT data from our 10<sup>th</sup> and 11<sup>th</sup> grade cohorts. We also look forward to successful SOL scores this spring and to welcoming our largest cohort ever this fall.

## 3<sup>rd</sup> Quarter Content and Projects

The 9<sup>th</sup> grade cohort continued with their greenhouse project and build their greenhouses.

PSAT scores 10<sup>th</sup> grade 2018

Group	Total Score	Evidence-Based Reading and Writing	Math
STEM	1086	554	532
School	927	468	459
District	1029	516	512
State	948	481	467

PSAT scores 11<sup>th</sup> grade 2018

Group	Total Score	Evidence-Based Reading and Writing	Math
STEM	1161	590	571
School	987	499	488
District	1122	563	559
State	1022	519	502

SAT scores 11<sup>th</sup> grade 2018

Group	Total Score	Evidence-Based Reading and Writing	Math
STEM	1230	622	608
School	1205	604	601
District	1253	623	630
State	1180	596	584

### 9<sup>th</sup> – Grade STEM Course Content: Food Theme

Global STEM Unit	Main Mathematics Content	Main Science Content	Main Engineering/ Technology Content
Green-house	Linear & quadratic regressions, right triangle trig, triangle similarity & congruence, polygon angle sum theorem, & transformation of functions.	Conservation of matter, nutrient cycling, biotic & abiotic factors, photosynthesis, cellular respiration, cell growth, ecological relationships, data analysis and trend lines.	Engineering design process; biotechnical design; construction and manipulation of an artificial climate; data collection and visualization; iterative designing; conceptual, physical, and graphical modeling.

Their greenhouses are fully constructed in our courtyard and ready to grow crops. Students were able to present their greenhouses to faculty members and explain their design thinking during project presentations April 9, 2019.



*Students work on designing and building greenhouses to support crop development.*

The 10<sup>th</sup> grade cohort spent the quarter working on their Ice Core project and Heating/Cooling application projects. Students are now working on creating a desalination device during the 4<sup>th</sup> quarter of the school year. They are also preparing for the upcoming SOL exams and we know they will succeed!

10 <sup>th</sup> – Grade STEM Course Content: Water Theme			
Global STEM Unit	Main Mathematics Content	Main Science Content	Main Engineering/ Technology Content
Ice Core	Curve fitting & characteristics of different families of functions; directly & indirectly proportional functions; inverse functions; graphical analysis & deriving gas law equations.	Gas laws, atomic spectra, Beer's Law, electromagnetic spectrum, Kinetic Molecular Theory, Molar Volume, Molecular Modeling,	Engineering design process; engineering tools for scientific discovery, enhancing skills of technical drawing, design testing and optimization
Heating/Cooling Application	Sankey Diagrams for efficiency, intro to statistics & bell curve; statistical significance; analysis & claims in consumer marketing.	Exo/Endothermic reactions, reaction types, balancing equations, enthalpy calculations, MSDS safety info, calorimetry, stoichiometry	Engineering design process; client directed constraints; enhancing skills in technical drawings; design testing and optimization

11 <sup>th</sup> – Grade STEM Course Content: Energy Theme			
Global STEM Unit	Main Mathematics Content	Main Science Content	Main Engineering/ Technology Content
Energy Storage	Definition of derivatives; extend to higher derivatives; analysis of graphical behavior.	Energy sources, kinetic & potential energies, energy transformations, motions, electricity, & nuclear reactions.	Engineering design process; Power grid systems; energy distribution; efficiency; potential and kinetic energy; energy storage and distribution.
Space Trash	Vectors; vector equations, derivatives, chain rule; graphical behavior of functions; anti-differentiation, integrals, kinematics	Motion, forces, momentum & impulse, circular motion, Newton's law of gravitation.	Engineering design process; Systems engineering; speculative designing; client directed constraints; orbital mechanics; aerospace engineering.

The 11<sup>th</sup> grade cohort completed their unit on Space Trash and Energy Storage. Students are now working on their Portrait of a Graduate presentations and personal engineering projects during the 4<sup>th</sup> quarter.



# Parent Information

- **SAVE THE DATE:** The Global STEM Celebration Ceremony to celebrate the 1<sup>st</sup> cohort of this program will be held June 6, 2019 at 6:30 p.m. More information will be sent home soon.
- **Global STEM Seal:** The Virginia Department of Education recently released a new diploma seal focusing on STEM. Students have to meet a number of requirements in order to be eligible for this seal. Specific information will be sent home soon in regards to this opportunity. For more information you can also see the [Graduation Seals of Achievement](#) page on the VDOE website.
- **FAA Volunteer Student STEM Initiative:** Students are invited to join the second annual FAA Volunteer Student Service Program (VSSP) STEM Initiative, July 23-25, 2019 at FAA headquarters in Washington, D.C. Students will tour three facilities and participate in an interactive simulation of what they learn during the event. Lunch and transportation from FAA headquarters to three tour FAA facilities will be provided. High school students interested in STEM related fields should submit their recent report card, resume, and a paragraph regarding career interests via email to [faainternprogram@faa.gov](mailto:faainternprogram@faa.gov) to be considered. Applications will only be accepted through May 10, 2019.
- **GSCP Senior Seminar:** Many parents and students have asked what we have to offer our students during their senior year since the program coursework is complete. We are developing a senior seminar program that will bring the GSCP students together once a month during the school day to learn about various related topics, hear from guest speakers, share work-based learning experiences, and continue developing their portrait of a graduate skills. More information about this program will be shared as it is developed. If you have ideas for senior seminar or know of someone who would make a great guest speaker please use the [feedback form found here](#) to let us know!
- **We want to hear from you:** If you have comments or feedback about the program, please complete the short [Google Form found here](#). 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!

## Important Dates:

- 5/13 – Algebra 2 SOL (10<sup>th</sup> grade)
- 5/21 – Chemistry SOL (10<sup>th</sup> grade)
- 6/5 – 11<sup>th</sup> grade Portrait of a Graduate Presentations
- 6/6 – 11<sup>th</sup> Grade Global STEM Celebration Ceremony
- 6/12 – 10<sup>th</sup> grade Portrait of a Graduate Presentations
- 6/13 – Last day of school for students

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