

Austintown Fitch High School

STEM Newsletter



March 2017

Calendar

April 1- College Credit Plus letter of intent due

April 8- ACT testing

April 10-14- Spring Break

Monday, April 3- 10th-12th gr. Deadline to apply to Fitch STEM

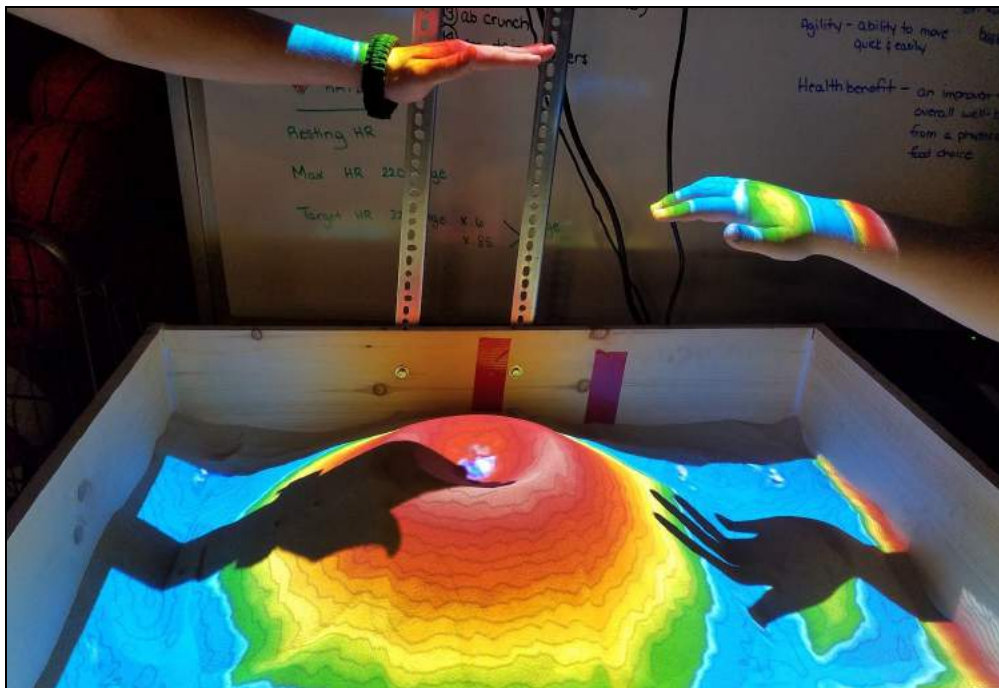
Tuesday, April 18- Fitch STEM Informational Night, Lecture Hall, Room 241, 6pm

Friday, April 21- 9th gr. Deadline to apply Fitch STEM Program

Friday, April 28- VEX Competition

Scrimmage, MCCTC

Wednesday, May 31- Last day for students



The 11th grade STEM students built an augmented reality sandbox. Simply mold the sand and the sandbox comes to life! The sand is augmented in real-time with an elevation color map, topographic contour lines, and simulated water. [Click here](#) to watch the sandbox in action!

Greetings STEM Families,

This is the Fitch High School STEM Newsletter for March. STEM is in full swing with many projects and activities on the books. On March 7th the Fitch STEM students held STEM Day at Austintown Intermediate School. It was during this time that the AMS and Fitch STEM students taught 4th grade students many STEM lessons and hands on demonstrations. Students learned about programming, robotics, electricity, 3D printing, windmill design, and much more! It was a fun, exciting day for all. Thank you to the PTA for organizing this event,

Students began state AIR testing with 9th and 10th grade students taking select tests such as English/Language Arts, Biology, History, Algebra, and Geometry. They also began scheduling and planning for next school year. We are currently taking applications for the 2017-2018 Fitch STEM Program. [Click here](#) for more information and to access the STEM application form. The deadline to apply for the Fitch STEM Program for next school year is April 3rd and April 21st for 9th graders.

APPLY NOW

Applications for the Fitch STEM Program are being accepted for the 2017-2018 school year. The link to access the application is below. Seats are limited.

Deadline is April 3rd, for grades 10-12 and April 24th, for 9th grade, or until all seats are filled.

[Fitch STEM Application Link](#)

TELL US WHAT YOU THINK

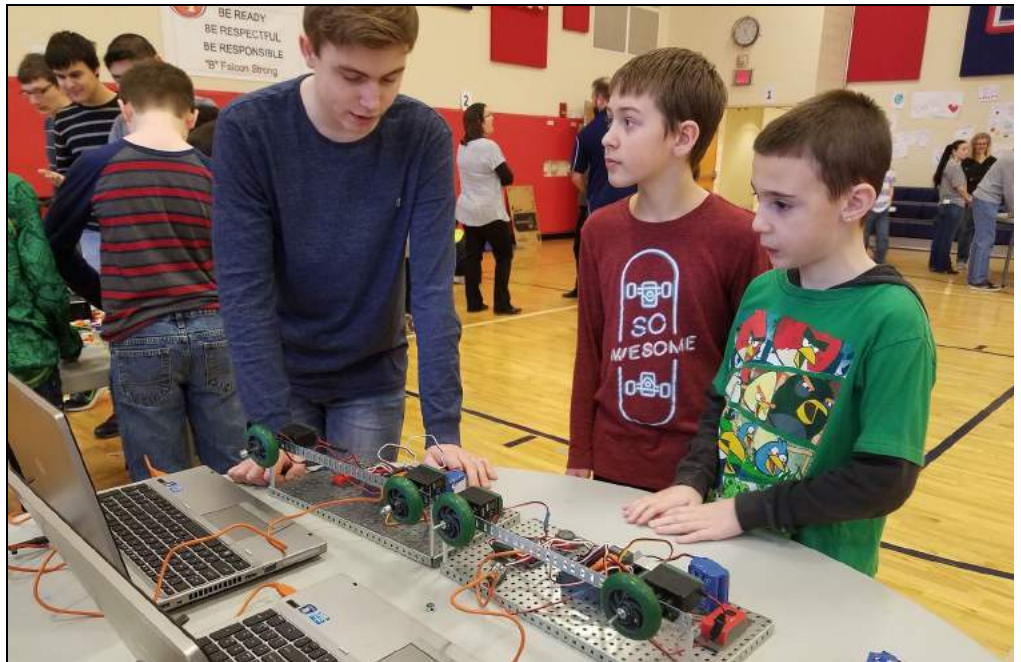
Click here to take a brief survey regarding you and your child's STEM experience. [Click here to take the survey!](#)



4th grade students were mesmerized by the augmented reality sandbox on STEM Day built and programmed by the junior Fitch STEM students.



STEM teachers pictured above are wearing their "Flash Gordon" t-shirts to support, Ray Gordon, longtime Fitch custodian who passed away March 29th. Ray was a big part of the Falcon Family and will be greatly missed.



Josh demonstrates to fellow 4th grade students how to program motors, digital, and analog sensors using basic programming skills during STEM Day at AIS.



Sam explains how a 3D printer works with 4th graders during STEM Day at AIS.



Nick and Ted hold up Arron in their hammock designed from plastic bags. This lesson was about “upcycling” materials and the various types of plastics.



Billy Jack demonstrates to a 4th grade students how to use AutoDesk to create 3D models during STEM Day at AIS.



Walter shows off his Greek inspired golf hole he designed in Inventor. The students worked as a team to create a 9 hole mini-golf course with the theme representing various countries throughout the world. Students were required to automate parts of their hole.

Fitch Focus on STEM



11th grade STEM students pose as they prepared for the STEM Informational Parent Night on March 23rd. It was during this time that Ms. Chine discussed the STEM Program Pathway, coursework, new equipment, as well as the additional of many College Credit Plus courses available to students in the STEM Program. Afterwards, students and families visited the STEM lab and students presented various demonstrations and projects. It was a fun-filled, educational evening.



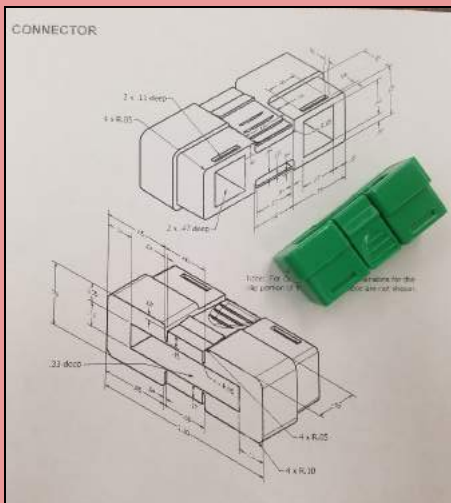
Students are creating and 3D printing custom-designed hall passes for teachers made by the students. Chad used advanced work plane techniques to add text onto a curved surface.



Kyle and fellow 4th grade students were all smiles while learning about compound machines during STEM Day at AIS.



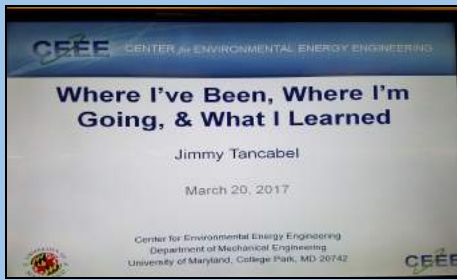
Jamie and Shania used teamwork and collaboration to measure various Automoblox parts. They will then recreate these parts using reverse engineering skills.



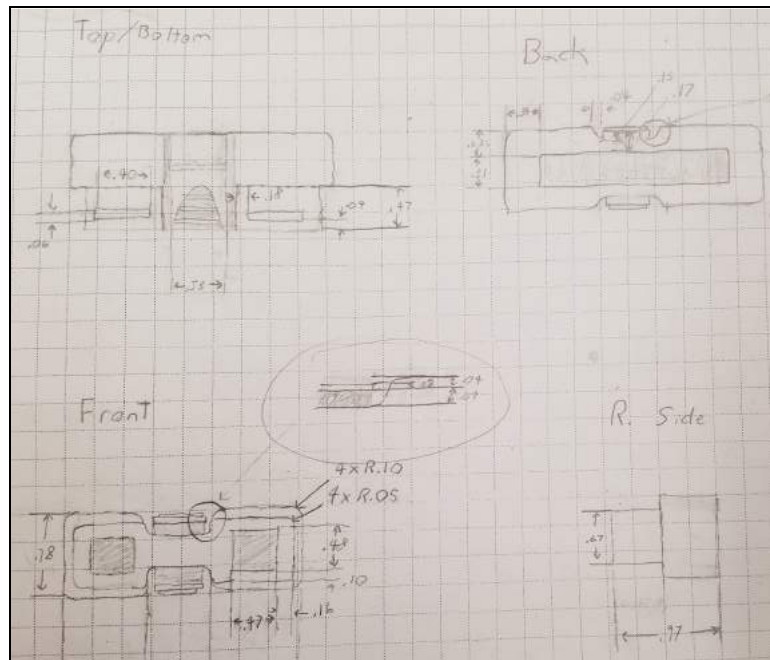
Schematic drawings of a student's Automoblox project on reverse engineering.

Introduction to Engineering Design

- ★ Students used reverse engineering techniques and skills to explain how the visual elements and principles of design affect the aesthetics and commercial success of a product. They performed a functional analysis of a product in order to determine the purpose, inputs and outputs, and the operation of a system.
- ★ Students created Automoblox by using newly acquired reverse engineering skills. They performed a structural analysis in order to determine the materials used and the form of the components. Students created a portfolio of their reverse engineering process which is documented below.



Jimmy Tancabel, a PhD candidate at University of Maryland's Center for Environmental Energy Engineering and former Valley resident, came and spoke to the STEM students about his pathway to engineering. The focus was on making smart decisions and following your dreams.



Zachary S. shared his schematics he created of his Automoblox using reverse engineering skills and techniques.



AMS STEM Alumni came to visit Mr. Freudenberg and speak with the 8th graders about their STEM experience. From left, Jackson, Josh, Joe, and Tylor did a great job describing their individual STEM experiences.



Nathan shows students how to create Lego 3D design simulations to model their own creations they made using Legos.

Principles of Engineering

- ★ Students completed a project on the reuse of materials, called the Plastics Challenge. Students researched and identified various types of plastics and their environmental impact. Then they created an innovative method of repurposing materials, called upcycling.
- ★ Students are using stress and strain calculation as well as



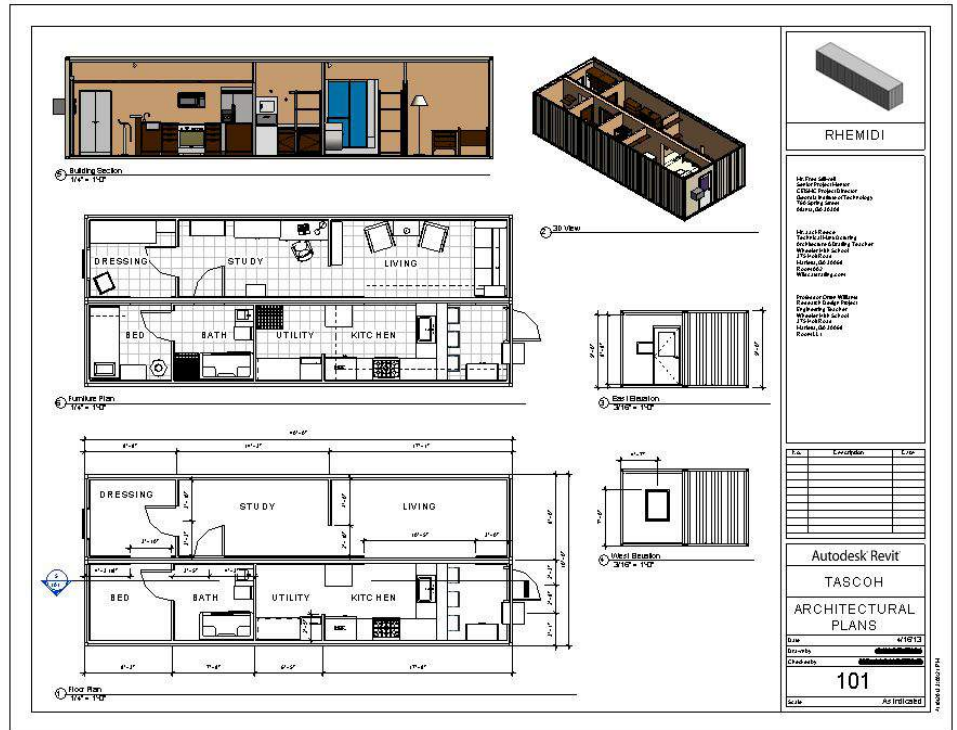
Zach, Caleb, and Evan helped transport the augmented reality sandbox from AIS to Fitch. Don't worry no students rode in the back of the truck.



Ms. Sroka displays her inner STEM with her watch featuring square roots for the hours.

tensile testing to perform materials analysis as part of the Statics and Materials unit.

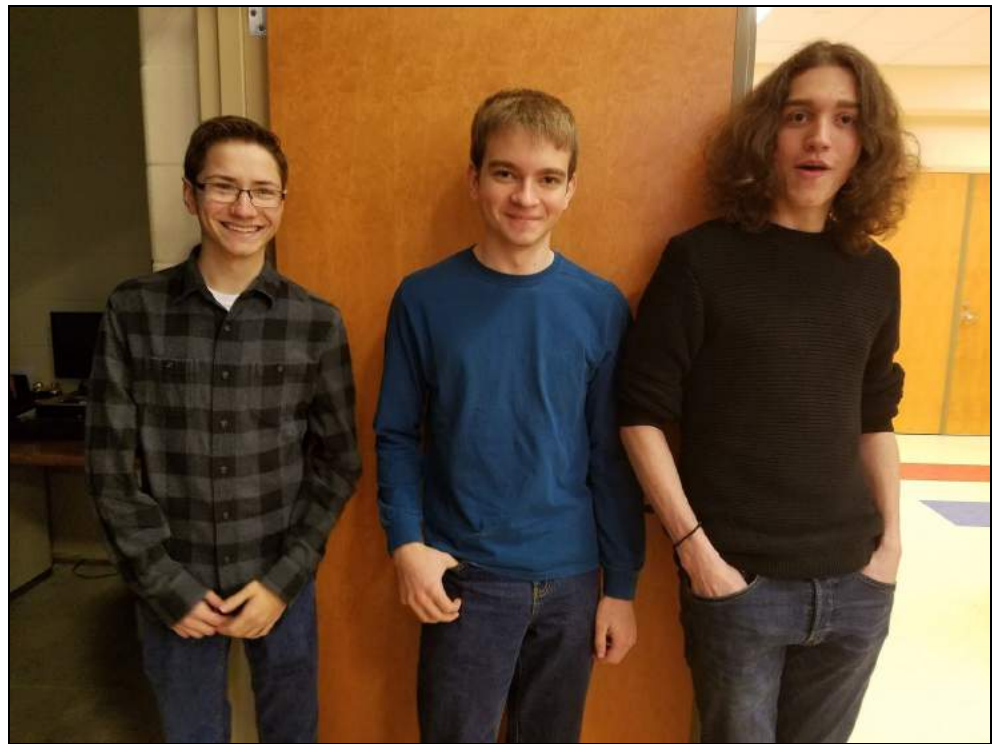
- ★ Students are using previously acquired skills from their early STEM years to repurpose used shipping containers. Students are using both Autodesk Revit and Floorplanner (architectural software programs) to design facilities out of used shipping containers. Then they will prototypes and present their ideas.



A repurposed shipping container home designed in AutoDesk Revisit, as part of a Principles of Engineering project which expands upon 2D and 3D design skills learned from earlier years.



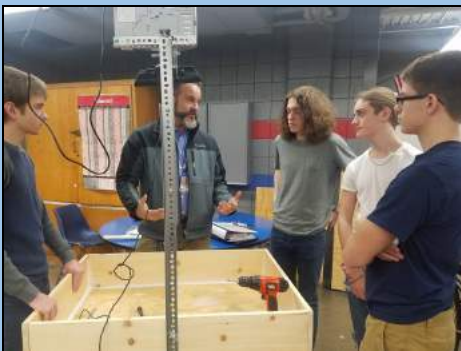
Tyler and Kyle troubleshoot the robotic arms for the juniors. Teamwork makes the dream work!



Robert, Jackson, and Tylor looked cool and calm while presenting the augmented reality sandbox at AIS during STEM Day.



Many parents came to support their students and learned about many of the STEM projects going on throughout the school year.



Technology Director, Mr. Ventresco teaches students how to connect the hardware and software of the augmented reality sandbox.



Mr. Freudenberg came from AMS to assist the 11th grade STEM students with the building of the augmented reality sandbox. Isaac Robbins is Mrs. Sroka's favorite.



Students were in awe of the augmented reality sandbox.



Junior STEM students created a nine hole golf course representing different parts of the world as part of a project to be featured at the Mall of America. It was "Around the World" in only nine holes.

Austintown Fitch High School STEM Program Pathway



2017-2018

"Ask not what I want to be
when I grow up, but what
problem do I want to solve!"



[Click here](#) to access an informational presentation regarding the Fitch STEM Program.

Computer Integrated Manufacturing

- ★ Students started Computer Science fundamentals beginning with Python, an all purpose, progressive programming language, using Project Lead the Way and Repl.It.
- ★ Students used building and circuitry skills to build small-scale robotic arms used in industry. They will begin programming the arms to complete 'pick and place' motions using VEX RobotC programming learned earlier this year.

```

1 # Import the modules
2 import sys
3 import random
4
5 ans = True
6
7 while ans:
8     question = input("Ask the magic 8 ball a question about the future!\n")
9
10    answers = random.randint(1,8)
11
12    if question == "":
13        sys.exit()
14
15    elif answers == 1:
16        print ("It is certain")
17
18    elif answers == 2:
19        print ("Outlook good")
20
21    elif answers == 3:
22        print ("You may rely on it")
23
  
```

Python 3.5.1 (default, Dec 2015, 13:05:11)
[GCC 4.8.2] on linux

Junior STEM students are using Repl.It and Project Lead the Way to learn the fundamentals of Python, a high level all-purpose programming language.

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[Austintown STEM Website](#)

[AMS STEM Student Website](#)

[Fitch STEM Student Website](#)

