



Austintown Fitch High School STEM Newsletter



November 2017

Happy Holidays!

Calendar

Dec. 12- VEX Competition at MCCTC (after school until 8pm)

Dec. 13- 2hr. Early Dismissal

Dec. 13- Computer Science Guest Speaker, Chris Askew

Dec. 14- Phantoms Hockey STEAM Field Trip

Dec. 25-Jan. 1- Winter Break

Jan. 2- School Resumes

Jan. 12- End of 2nd nine weeks

Jan. 11- STEAM at Creative Arts Night at Fitch

Jan. 15- Martin Luther King Jr. Day- No School



Jared, Tre', Kyle, and Charles ransacked Mr. Freudenberg's most prized items, a beaver fur, Abraham Lincoln's "Lit" hat, a model Civil War cannon, and a Soap Box Derby trophy. These students visited AMS and talked with 8th grade students about the Fitch High School STEM Program.

Greetings STEM Families,

It was an academically intensive month in the Austintown Fitch STEM Program as students were immersed in their STEM courses working full speed ahead. Currently, we are taking applications for the 2018-2019 school year. [Click here](#) for more information, to access the application, and to view our monthly newsletters. This is a great way to gain a collective view into the "daily in the life" of a STEM student at Austintown Fitch High School.

STEM Ambassadors visited Austintown Intermediate School and taught 5th graders the basics of team building while participating in [The Marshmallow Challenge](#)! Click on the link to try it yourself and to see how you measure up! Students also brought various 3D printed items and explained the printing process. The highest level of understanding is in the ability to teach others. The Fitch STEM students were able to do just that!

APPLY NOW

Applications for the Fitch STEM Program are being accepted for the 2018-2019 school year. The link to access the application is below. Seats are limited.

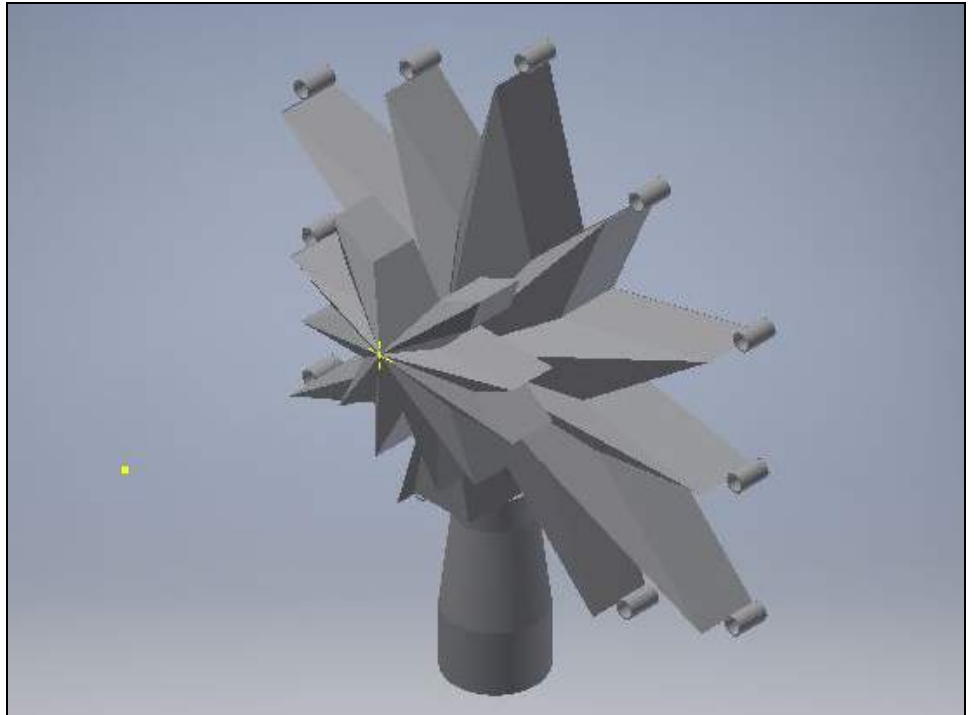
[Fitch STEM Application Link](#)



Students can order Austintown Fitch STEM Program T-shirts. They were designed by STEM students and are being made by the Fine Arts Department. Please consider buying a shirt and supporting the Austintown Fitch STEM Program.



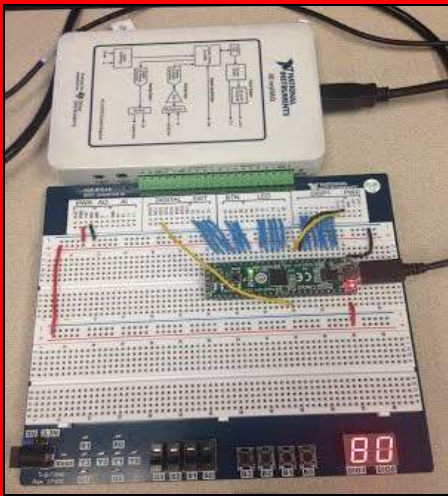
11th & 12th grade STEMmers visited 8th grade Science classrooms to talk about their personal experiences participating in the STEM program. They even caught up with Mrs. Infante.



Brandon, a 3D Design student, created his own star to put on his holiday tree. Students custom designed and 3D printed their own ornaments to decorate a holiday tree in the classroom.



JaNyaha was cracking herself up while "cheating" during The Marshmallow Challenge at AIS. She touched the marshmallow assisting her 5th grade team.



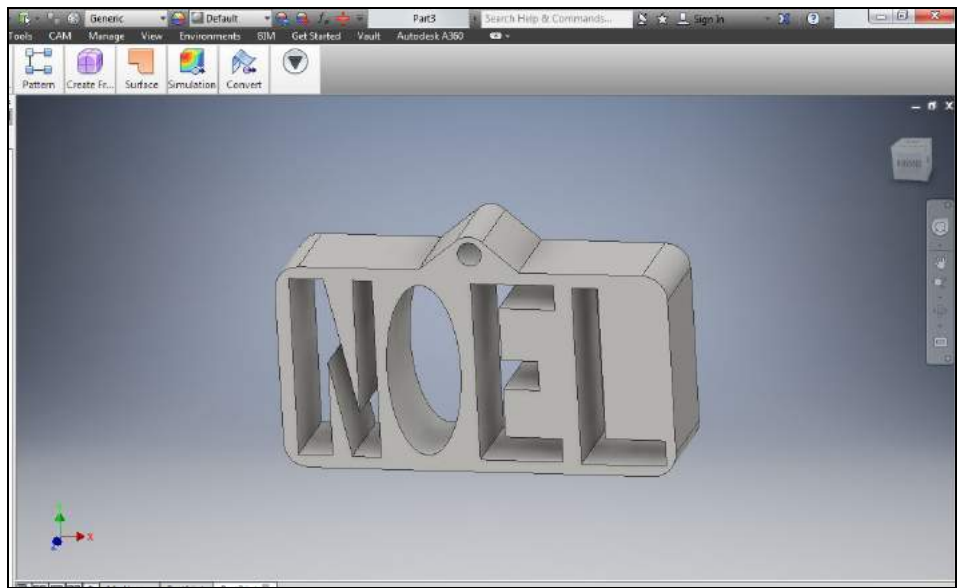
In the Electronics unit for POE, students began creating breadboards, a reusable platform to temporarily build electronic circuits.



Students and parents can access all assignments and projects via Google Classroom and PLTW.org.



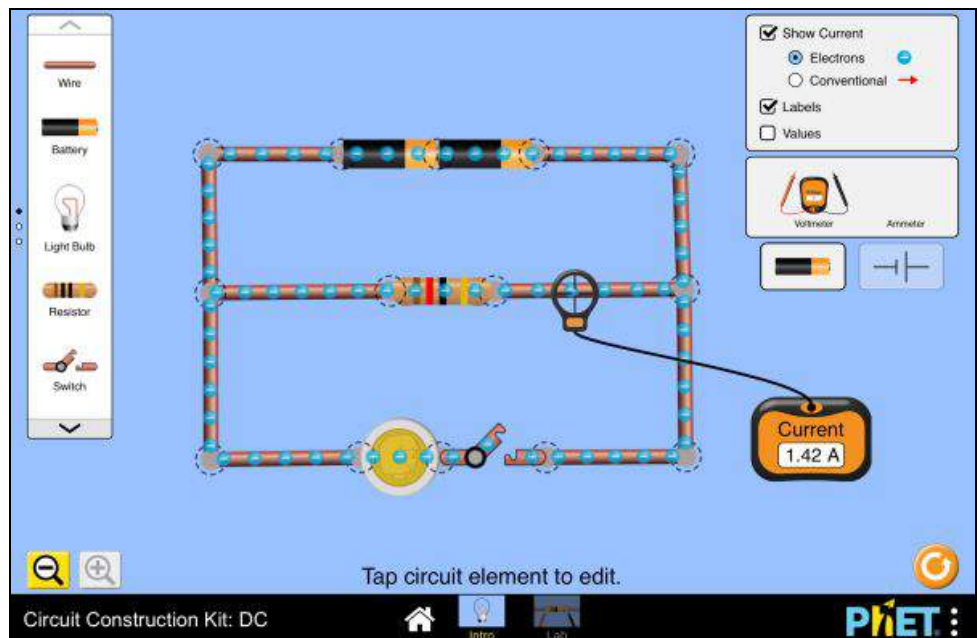
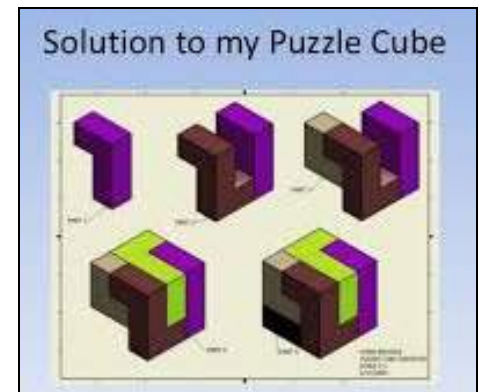
Jeremy models precise measuring using dial calipers.



Erica created and designed a holiday ornament for her tree.

Introduction to Engineering Design

- ★ Students began their wooden puzzle cube project by creating puzzle pieces using orthographic and isometric sketching techniques. They performed applied statistical analysis of the different solution combinations. Soon they will use their acquired computer modeling skills to create the assemblies in Autodesk. [Click here](#) to access the video of a sample final assembly.



Students used the Phet simulation, [DC Circuit Simulation](#) to model DC circuits in preparation for the Principles of Engineering unit on circuitry.

For the parallel circuit shown, use the laws of circuit theory to calculate the following:

-

The image shows a breadboard circuit for a 555 timer astable multivibrator. The breadboard is labeled "BREADBOARD MB-106 R.S.R. ELECTRONICS". It features a 555 timer IC, a 10k potentiometer, and several resistors. The circuit is powered by a 5V regulator and a 9V battery. A 555 timer module is also shown on a separate PCB.

Education is simply the soul of a society as it passes from one generation to another. ~G. K. Chesterton

The screenshot displays the RobotCAD software interface with several callouts highlighting key features:

- Standard Toolbar**: Located at the top left, showing various tool icons for editing and simulation.
- Program**: A list of programs on the left side, including "BILL TENSING" and "1. Turn Bill Output 1".
- Expanded Teach Positions**: A panel on the left showing a list of teach positions (e.g., "273 Home Coplanar", "274 Go Linear to Position 13 Speed 5") and a "Go" button.
- Robot Movement**: A callout pointing to the "Robot Movement" button in the bottom left toolbar.
- Manual Movements**: A callout pointing to the "Manual Movements" button in the bottom left toolbar.
- 3D Image**: A callout pointing to the 3D model of the robot arm in the center workspace.
- Positions**: A callout pointing to the "Positions" button in the top right toolbar.
- Dialog Bars**: A callout pointing to the "Dialog Bars" button in the bottom right toolbar.
- Workspace**: A callout pointing to the "Workspace" button in the bottom right toolbar.

Students used the RoboCell software program to control their robotic arm using pick and place programming in Computer Integrated Manufacturing.



3D printing design technology like the prosthetic hand seen in the picture above can be created, printed, and assembled using the technology available in the Fitch High School STEM Program.

Computer Integrated Manufacturing (11th grade)

- ★ Students are learning to use the RoboCell software to control their robotic arms. This equipment is a small scale model of what is used in modern manufacturing plants such as Honda and General Motors.



Engineering Design & Development (12th grade)

- ★ Students have created a solution design presentation with justification to establish the need for their invention or innovation in society. They have researched the intellectual property on similar innovations and are ready to purchase materials needed to build their own prototypes.



Sidney and Cedric guide their team of 5th graders during STEM Ambassadors through participating in The Marshmallow Challenge, a team-building design competition.

“From witnessing many people learning how to program, I have always found those who start with Python pick up programming skills the fastest.”

—John Camara in response to the ITworld article “Python squeezes out JavaScript, C as best starter programming language”

The Computer Science 1, 2, & 3 courses offered at Austintown Fitch High School use Python and other up and coming languages to teach students the basics and beyond of computer fluency.

Computer Science 1

- ★ Students are using the language of Python to create a grid system for the game, Battleship. They are putting together all previously learned skills of using strings, variables, loops, if/else statements, etc. to program an interactive game.

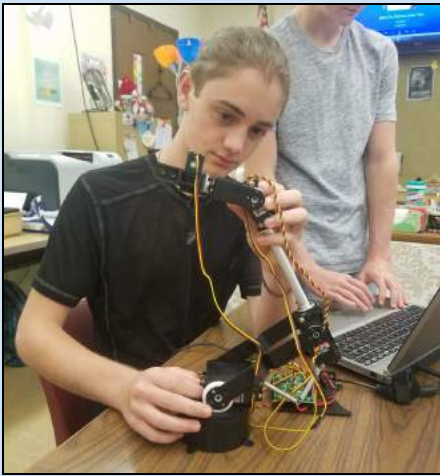
```
1 from random import randint
2
3 board = []
4
5 for x in range(5):
6     board.append(["0"] * 5)
7
8 def print_board(board):
9     for row in board:
10         print(" ".join(row))
11
12 print("Let's play Battleship!")
13 print_board(board)
14
15 def random_row(board):
16     return randint(0, len(board) - 1)
17
18 def random_col(board):
19     return randint(0, len(board[0]) - 1)
20
21 ship_row = random_row(board)
```

```
Python 3.6.1 (default, Dec 2015, 13:05:11)
[GCC 4.8.2] on linux
>
Let's play Battleship!
0 0 0 0
0 0 0 0
0 0 0 0
0 0 0 0
0 0 0 0
4
0
Turn 1
Guess Row: 1
Guess Col: 1
You missed my battleship!
0 0 0 0
0 X 0 0
0 0 0 0
0 0 0 0
0 0 0 0
Turn 2
Guess Row: 3
```

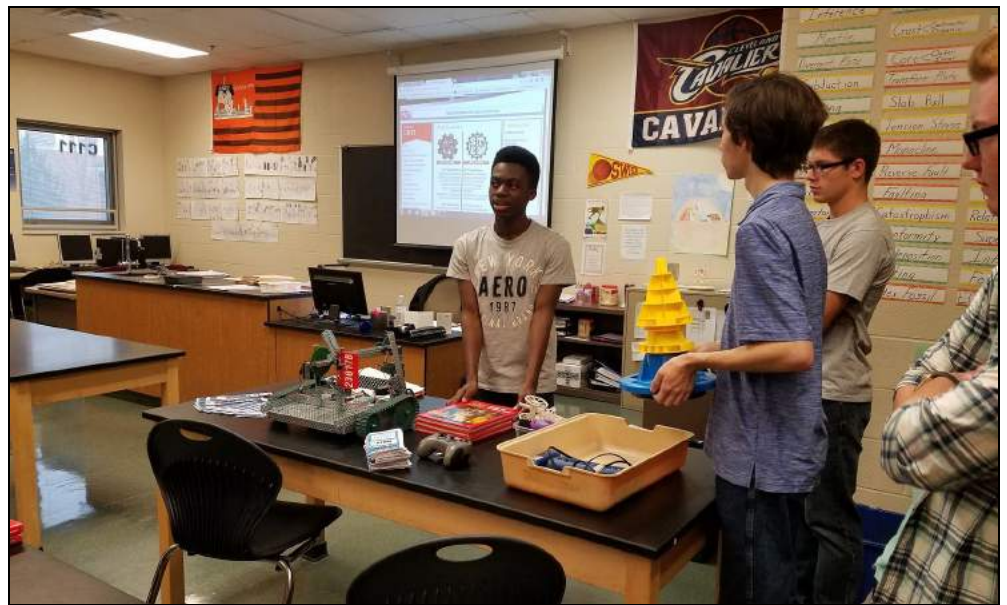


Of the 20 fastest growing careers, 15 of them require a background in math or science.

@NMSI



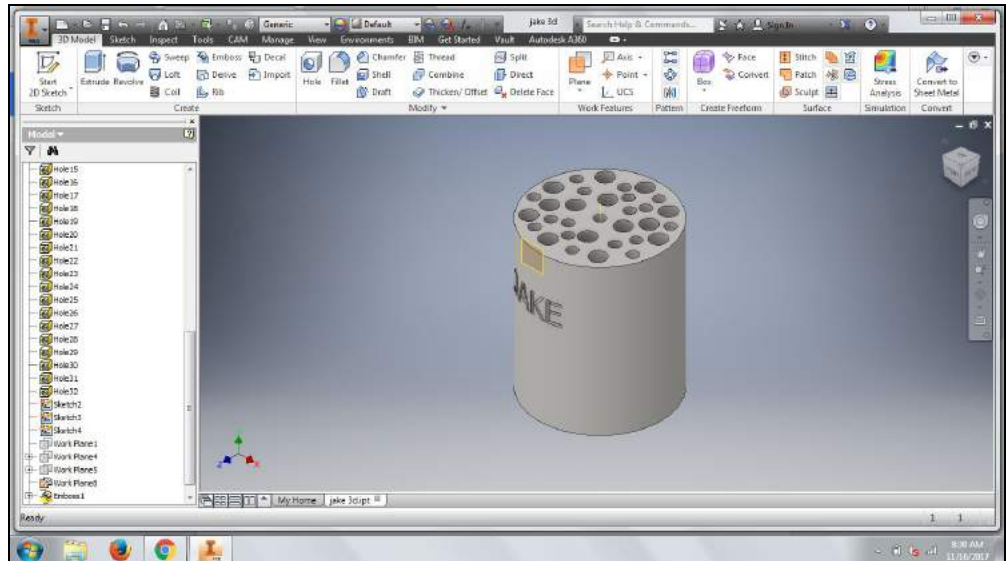
Victor is picking up where he left off last year building and programming a miniature robotic arm. Last year, he was able to construct the arm and install the electrical components. However, when he programmed it to move left, it went right and vice versa. Sounds like some problem-solving skills are in the works!



Tre', Walter, Kyle and Jared visited 8th grade science classrooms and talked about their own personal experiences in the Austintown Fitch STEM Program.



Seniors have all been paired with a local business owner or industry partner as part of the internship component for the Engineering Design & Development course.



Jake created this custom-designed pencil holder to contain pencils, pens, and other writing utensils with a wide range of diameters.

STEM



The vision of Austintown Local Schools is to offer a united community with a proud legacy and a progressive approach to education. We prepare our students by providing an inspiring education with a focus on a future of unlimited possibilities. One way of extending progressive educational initiatives is through our many **STEM (Science, Technology, Engineering & Math)** programs and extracurricular activities starting in kindergarten through graduation. These programs

Registration Info

[AMS STEM Program Application](#)

[FITCH STEM Program Application](#)

[\(Now accepting applications for the 2018-2019 school year\)](#)

[STEM Newsletters](#)

Find out more...

[AMSSTEM.com](#)

[21 WFMJ Feature 2/2/17](#)

[Weather Balloon Launch](#)

[Electrifying & Engaging Experiments in STEM Class](#)

For more information about STEM programming and initiatives at Austintown Local Schools [click here](#).

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[Austintown STEM Website](#)

[AMS STEM Student Website](#)

[Fitch STEM Student Website](#)

