A. Linwood Holton Governor's School

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Introducing Asynchronous Classes

We are excited to announce that for the Fall of 2017 the A. Linwood Holton Governor's School will be offering asynchronous courses for the first time. Based on your feedback, we understand that our master schedule and your school's master schedule do not always mesh and that sometimes students have scheduling challenges. We believe this new option for courses is one way that we can help you with scheduling students into Governor's School classes.

The following courses are planned as asynchronous for the fall of 2017:

Advanced Multimedia
Appalachian History
Creative Writing
Environmental Science
World Civilization

Upcoming Events

May 5

Last Day of 2016-2017 Classes

July 31

Orientations Begin

August 9

First Day of Fall Classes

Your Time, Any Time

Asynchronous communication is the exchange of knowledge between teacher and student through archived lessons and email communication. Students attend "classes" as schedules permit rather than according to a synchronized time for both the teacher and student.

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The Wisdom of Community

While we are offering asynchronous courses, we are committed to several principles that are key to making our courses unique and worthy of the distinction of being Governor's School courses.

- Students will be able to speak to their instructor through scheduled live office hours.
- We will be developing community building events that the students will be required to participate in so that they get to know other Governor's School students. These will be fun and engaging opportunities to learn similar to our other Governor's School classes. For example, Creative Writing students may meet at the Barter Theatre for the Young Playwrights Festival, an Environmental Science student may participate in a fieldtrip to Bays Mountain, or we may have an event at the Southwest Virginia Higher Education Center for all of the students enrolled in an asynchronous classes.
- The classes will be dual enrollment and provide engaging instruction and learning experiences so that students will be prepared for higher education.

Student Reflections

G reen
B ank
O bservatory

Field Trip

Radio Astronomy

"My experience during the Green Bank Observatory was wonderful, and far more enjoyable than I expected it to be. Rather than simply going through the tours and seeing demonstrations of the technology, I could experience the operation of the radio telescope firsthand, and develop a better understanding of radio astronomy by doing so. It was a unique, and most likely even a **once-in a-lifetime, experience** to conduct my own research with the telescope and be allowed to then draw conclusions from my research and present it to a committee of my peers. It was the exact experience of being a radio astronomer. I especially enjoyed the presentation part of the project that I worked on, as I really got the feeling the research I did was important in that moment, if only to the few people who were in the auditorium." *Dakota Hill*

Alumni: Cody Woods

I took **Engineering Methods and Computer Programming** (EMCP) through A. Linwood Holton Governors School (ALHGS) in the spring of my senior year. I had gone into the class with a very basic foundation of computer programming, as I was involved with a robotics team. In the course, we mainly used Python, a computer programming language to accomplish tasks. In addition to Python, we used an Integrated Development Environment (IDE) called Processing to create graphics and interactive dialogue boxes. One of the cool things we did in EMCP was writing a computer program to create an interactive cannon/cannonball game. My time spent in EMCP was very rewarding. The experience I had while taking EMCP is one I will never forget. Through the instruction of Dr. Bruce Norton, I was given the necessary skills to enter introductory college programming courses with ease. In addition, I was given the opportunity to intern for a local internet company. I wrote code to remotely access generators. Working as an intern, I made use of my skills in a real-world application.

When you sit in front of a blank screen, the computer is yours for the making. You have the possibility of making an entire universe at your fingertips. When you learn the language of computers, you can make your ideas reality.

Poetry Winners!

Congratulations to Mackenza Harris from Council High School (3rd) and Gill Shepard from Castlewood High School (2nd) for placing in the 41st Annual John Fox Jr. Literary Festival's 13th Lonesome Pine Poetry Contest sponsored by The MECC Foundation, Inc. There were 242 contest entries among three divisions and two categories. Mackenza and Gill received cash prizes and publication.

L-R: Dr. Steve Rapp, Physics Instructor / Elizabeth / Dr. Mike Robinson, Director

Race of the Year

CONGRATULATIONS to Elizabeth Bise, winner of a transforming robot for her 1st place finish in the HGS Physics' Mousetrap 400 Race. Well Done!

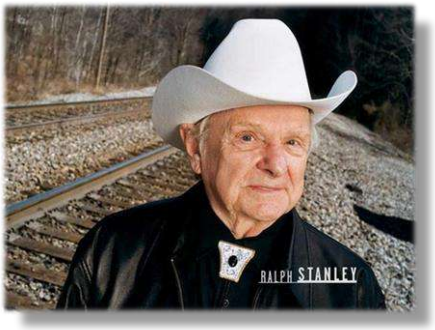
Students had to construct their own cars from balsa wood, four wheels, a piece of string, some glue, and a mousetrap. This hands-on, minds-on project allowed students in Dr. Rapp's Physics class to be creative and to show how physics can be relevant in everyday life. All students had identical components to assemble into a screaming, go-fast race car. Students had to turn in a lab report concerning the race. They had to time how long it took their race car to traverse 4 meters (4oo centimeters, hence the Mousetrap 400). By knowing the time and distance covered they could calculate the speed of their cars. With this information they also calculated the average acceleration. They could see applications of the physics equations they had learned in class.

Anatomy & Physiology Field Trip

Students visited the Virginia Tech campus in Blacksburg to tour and work on labs at the Biocomplexity Institute, the Fralin Institute of Biotechnology, as well as Tech's College of Natural Resources and Environment. They also made discoveries in the Gross Anatomy Lab at the Virginia College of Osteopathic Medicine.

This trip was a learning experience that many will never forget!

Our Appalachia: Famous Folks, Legends, and Murder, oh my!



During the end of this school year, the students in the 7:20 Year Long Appalachian class were deeply immersed in completing their Mysteries in Appalachia papers and their Course Projects. The results of their efforts should be noteworthy additions to the online Appalachian archive. "I anticipate that the work of these young people will enhance the study of our region and local history," said ALHGS History instructor Mark Hagy.

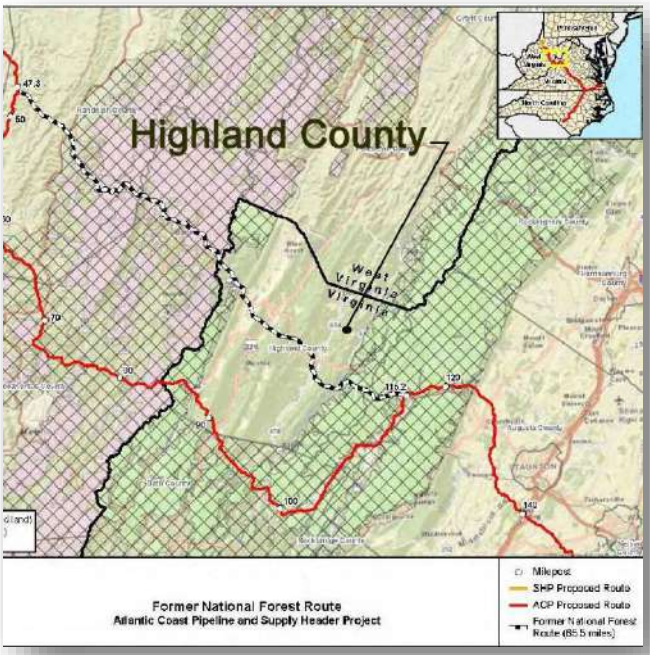
Famous natives of Appalachia figure prominently in the work of these young peoples. Alexandria Mullins of Eastside High School is putting the finishing touches on a Course Project on the life of music legend Ralph Stanley. Gabrielle Collins, also an Eastside student, is working on a Project dealing with the life of actor George C. Scott. Alex Rowe of Twin Valley High School is finishing a Project on the life Virginia Governor George C. Peery. Finally, Ashlyn Jones, Eastside High School, is researching the life of Cold War figure Francis Gary Powers. "Based on the rough drafts, I am confident that these famous Americans, natives of Appalachia, will be more thoroughly understood in their proper context," Hagy remarked.

In addition to famous Appalachians, these students have delved into the folklore and heritage of the Appalachian region. Gabrielle Collins has spent a good deal of time researching the legendary "Black Cat" of the Appalachian Mountains. Collins asserts after her lengthy research, "For centuries, there has been said to be sightings of a screaming black cat. However, with research on the subject, there are no Black Panthers or mountain lions in our region. Those who have said to have seen them are scared for life, and will stand for what they saw. I believe when people say they heard a woman screaming it is just an actual mountain lion, but not a black one. Hearing those screams and seeing their large bodies will forever haunt someone." Alexandria Mullins has researched the Appalachian Woodbooger (the Appalachian variant of the Bigfoot myth. After careful research and reflection, Mullins asserts "I cannot say that I do fully believe in the legend. In my opinion, there is not enough scientific evidence to prove that the existence of Bigfoot is true. People have not been able to come up with enough physical evidence to prove the matter at all. And that is why I still have not come to a conclusion on the legend of the Appalachian Woodbooger." When asked about the Black Panthers and the Woodbooger projects, Hagy reflected on the quixotic nature of these topics. "Alex is the third student to delve into the Woodbooger legend and her conclusions make me think that it is indeed a legend. The topic is a perennial favorite for the Mysteries in Appalachia assignment. Perhaps Alex's work will be the final work on the Woodbooger legend…until some dark and stormy Appalachian night and a strange noise is heard." Hagy went on to state that Collins work might yield further projects in future Appalachian history classes since people are more willing to believe in Black Cats than in Bigfoot. Especially, Hagy observed if that strange noise on a dark night sounds more like a panther than the Woodbooger.

The Case of Roger Keith Coleman, especially the DNA confirmation of Coleman's guilt, has led Alex Rowe to produce a fine Mysteries in Appalachia: Crimes of Appalachia research essay. After his research, Rowe states, "In my mind and probably most people today, we accept that Roger Coleman was the murderer due to the massive amount of evidence and the DNA test that proved his guilty." Ashlyn Jones delved into the shooting of current Wise County Sheriff Ronnie Oakes in 1972 when he was a Virginia State Trooper. Jones states upon the completion of the research, "The stars aligned perfectly that night to create a leader that has bettered the community for over 40 years and only grows stronger when faced with challenges and adversity." While Rowe and Jones dealt with a famous case and with an issue that is frequently in the news, Louvina Ball, Eastside, has produced a Mysteries in Appalachia: Crimes of Appalachia report dealing with a little known crime from 1994, the Eva Robinette case. Her report shows the benefits of oral history as a tool to investigate such cases. Ball's Course Project, on Moonshining, promises to be one of the most comprehensive projects on this topic in the Appalachian archive.

The Spring 2017 Appalachian Mysteries in Appalachia and Course Project assignments have continued the quality of work produced by earlier students. With the coming of asynchronous Appalachian history classes in the 2017-2018 academic year, this intellectual output promises to continue. "ALHGS Appalachian History students always make the past come alive with relevance and eloquence," Hagy remarked.

Of Pipelines and Eggs



Highland County, Virginia. With an estimated population of a little over 2200 people in 2015, it is the least populated county in Virginia. Sometimes known as "Virginia's Little Switzerland", it also has one of the highest average elevations east of the Mississippi River. It is known for its maple syrup and annual Maple Festival. It is a region whose economy is dependent upon agriculture.

Enter the proposed Atlantic Coast Pipeline and Supply Header Project, a pipeline for the delivery of natural gas to multiple public utilities as well as local distribution companies in Virginia and North Carolina. Dominion Transportation expects to spend $500 million on its Supply Header Project in Pennsylvania and West Virginia. Even more will be spent in Virginia and North Carolina for land acquisition and construction. The original project proposal took the pipeline across the middle of Highland County. The new path, which is shown in red on the accompanying map, moves the pipeline more to the national forest with only a small length of the pipeline crossing Highland County at its "tip." The environmental impact of the pipeline is being well studied, with a first draft of an impact statement released by the Federal Energy Regulatory Commission in December 2016. But what of the economic impact? The pipeline project will require the one-time purchase of land and/or easements for the pipeline as well as numerous access roads during and after construction. What will be the economic impact to Highland County with all the landowners in its path receiving payment for their land? How much of their payment will make it to the local and regional economies? How much will the pipeline workers themselves influence local economies? How has the economic impact changed with the proposed pipeline path movement? The Highland County **Economy**.

Egg producers in Highland County believe their eggs are bigger and better, on average, than others produced and marketed in the Commonwealth of Virginia. They attribute the difference to the feed and overall treatment of the layers. Well, are they really and if so, what is the cause? The Highland County **Livestock Business**.

Why is a gas pipeline construction project – local **economy** - and egg production - **livestock** - topics of discussion in this newsletter? **STATISTICS**. Both the **economy** of Highland County and its egg production **livestock business** can be analyzed using the tools developed in Probability & Statistics (P&S). In fact, both topics are part of spring semester projects chosen by students in the Governor's School's Probability and Statistics academic year class.

So will the pipeline effect the people in Highland County in the "pocketbook" in a noticeable way? Are the eggs really bigger and better in Highland County? Look for the answer in the next HGS newsletter.

Not really interested in economics or livestock? What about sports? Or medicine? Or business? Or computers? Or literature? Or computer programming? Or …? Almost all careers rely heavily upon statistical analysis tools, many of which are discussed in the Governor's School's P&S course. Contact bnorton@hgs.k12.va.us for additional information.

Dr. Bruce Norton, *Probability & Statistics, EM&CP* Instructor

Green Bank Observatory

The Wave Whisperers

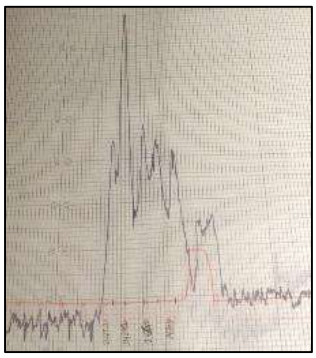
Physics and Astronomy students from Dr. Steve Rapp's classes arrived at the Green Bank Observatory in Green Bank, WV at 2:30 pm. on March 17. Shortly after arrival, Sue Ann Heatherly, astronomer/educator, greeted us and invited everyone onto the bus to go down to the 40 foot telescope so the students could learn how to operate the telescope. As the students entered the

underground control room they were somewhat intimidated by all of the gauges and dials on the control panel. Sue Ann assured them they would be successful though. By Saturday morning, all of them had become proficient at controlling the telescope.

The observatory at Green Bank until recently was referred to as the National Radio Astronomy Observatory (NRAO). Due to a significant reduction in funding from the National Science Foundation, the observatory has changed its name to the Green Bank Observatory (GBO) and embarked on an effort to become self-sustaining. The GBO is the site of the world's largest steerable, single aperture radio telescope. The dish is 300 feet by 310 feet and could hold two football fields.

Sue Ann gave the students a tour of the GBT control room. Students were impressed with all of the technology involved in operating the telescope. Two of my students indicated that radio astronomy sounded like an exciting career to pursue. They discovered also that when they enter college, GBO will offer them a stipend to work there during the summer!

One of the teams beamed in on the Milky Way's Galactic Equator to locate neutral hydrogen atoms. As they studied different regions of the Milky Way, the students found that redshift and blueshift occurred as they observed the different regions. In a discussion with Sue Ann, it was determined that further study needed to be done. So, the students robotically controlled a 20-foot diameter NRAO telescope to get more data on their project. They will periodically have an online discussion with Sue Ann about their investigation. This image shows a radio scan of the Milky Way Galaxy that this team obtained using the 40-foot radio telescope. You will notice peaks showing verification of neutral hydrogen atoms.



After the Sunday morning presentations, Sue Ann had something to say to the students:

"Congratulations on a job well done. You arrived Friday to become a radio astronomer. Two days later you have become radio astronomers."

Dr. Steve Rapp, Instructor
of Physics, Astronomy,
and Engineering & Robotics