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- West Virginia University, Institute of Technology
- West Virginia Wesleyan College
- Wheeling Jesuit University
- WV High Technology Consortium Foundation

A Message from the Director

Dear Friends,

The NASA West Virginia Space Grant Consortium (WVSGC) supports many programs that focus on research, collaborations with high-technology industries, student fellowships, as well as K-12 and public outreach programs. In this issue, we aim to highlight a few of these programs. Thanks to the dedication and hard work of our faculty, affiliates, board members, and colleagues, the WVSGC and NASA EP-SCoR continue to expand their coverage and services in West Virginia.

We are pleased to welcome Dr. Sarah Armstrong Tucker, Chancellor of Community and Technical College Systems of West Virginia, to our Board of Directors. We look forward to her contributions and guidance in shaping the future of the consortium. Finally, we would like to congratulate our 2016-2017 award winners. We wish them the best in their research careers, and look forward to their future participation in our programs.

Majid Jaridi, Ph.D., Director

Boa Constructors Attend World Festival



Boa Constructors booth at World Festival.

The Boa Constructors are a FIRST LEGO League (FLL) team of nine students from Mountain View Middle School in Union, WV and range in age from 10 to 13. FLL teams research a real-world problem and are challenged to develop a solution. They also must design, build, and program a robot to compete on a tabletop playing field. In December 2015, the Boa Constructors won the WV FIRST LEGO League State Championship Tournament, which was held at Fairmont State University.

Because the Boa Constructors won the state-level robotics competition, they earned the opportunity to compete in the World Festival. "Union, W.Va., is sending that team, and that's us!" said Boa Constructors team member Cade McMunigal. "I'm proud that we did it, coming from such a small community, beating the larger cities and towns." From April 27-30, the Boa Constructors were in St. Louis, MO competing in the FIRST LEGO League World Festival with their robot, Quazzy. They were one of over 105 teams from across the world. Although their robot finished 39th, they were awarded the 1st Place Core Values Inspiration Award.

Wheeling Jesuit University Students Present Their Research

Submitted by: Ms. Margie Cooke

Margie Cooke, Wheeling Jesuit University (WJU), member of the Board of Directors of the NASA WV Space Grant Consortium, announced that several of the NASA WV Space Grant research fellowship recipients from WJU recently presented their research at the annual March meeting of the American Chemical Society in San Diego, CA, and at WJU's annual Research Symposium. Space Grant fellowship recipients Shelby Caddies and Nicholas King, both senior chemistry majors, presented their research at the American Chemical Society. Shelby and Nicholas, along with Space Grant recipient Brett Szeligo, a junior chemistry major, also presented at WJU's Research Symposium.



From left to right: Nick King, Whitney Workman, Victoria Hill, Shelby Caddies, Megan Blackburn, Meredith Rohan, Holly Kraus,

Dr. Mary Railing, assistant professor of chemistry, was awarded a College Course Development grant of \$5,000 at the recent Board of Directors meeting in April, 2016. Her project, entitled "Introduction to Environmental Issues: A Holistic Approach," will begin in the 2016-17 academic year.

Two-year Space Grant scholar Elizabeth Bain (2013-14 and 2014-15) is WJU's Class of 2016 valedictorian. She is a chemistry major with a 3.97 GPA, and will continue her studies at the University of Chicago, where she will seek a doctoral degree in chemistry. She plans to eventually teach and research at the college level.

Shepherd University Offers New B.S. Degree

In April, Shepherd University (SU) heard the news they were hoping for. They were approved to offer a B.S. degree in data analytics. Shepherd University is now the first institution in the state of WV, and one of the first in the region, to offer this degree. The new major will begin in the 2016-2017 academic year.

"Science, technology, business, crime, governance, recreation, and our private lives are all impacted by society's increasing capacity to generate, store, and transmit digital data. Data analytics codifies the theory and methods for deriving knowledge and meaning from that data. Although the field has a deep history, undergraduate programs that focus on developing its next generation of leaders and practitioners are just beginning to emerge. It is an exciting time to be involved in this field. Through our research, external grants, and course development activities, Shepherd University is well-positioned to develop a successful and valuable program in data analytics. Our planned course of action navigates current financial constraints by leveraging existing Shepherd University resources and highlights work that we are completing under recent grants, including a NASA WV Space Grant Consortium College Course Development grant. The proposed curricular framework will support the program that we hope to grow through the efforts of dedicated faculty, energetic students, and targeted marketing and recruiting. A successful new data analytics program at Shepherd University will have an enduring, positive impact on our students, our region, and our state." - Dr. Ralph Wojtowicz



Dr. Wojtowicz in the Shepherd University Laboratory for Big Data Analytics

NASA WVSGC holds NASA S.P.A.C.E. Day

On April 16th, the NASA WVSGC, in collaboration with NASA IV&V Facility, Fairmont State University, and the Student Partnership for the Advancement of Cosmic Exploration, held their Annual NASA S.P.A.C.E. Day at Fairmont State University. This community event brought in hundreds of interested kids and adults from around the area. During the early hours of the event, airplanes were flying as the community participated in a paper airplane competition. At the same time, NASA-sponsored students were giving poster presentations in hopes to win an award. The day ended with keynote speaker Dr. Kerri Phillips (Johns Hopkins University Applied Physics Laboratory), and the handing out of airplane competition and poster presentation awards.

Exhibits at S.P.A.C.E. Day included the Fairmont State Flying Falcons, WVU Formula SAE, WVU Rocketry Student Organization, Rocket Launch by the NASA IV&V Facility, Science Behind Cycling, SMART Centre, West Virginia Space Public Outreach Team, Solar Army, Construct a UFO and Spin the STEM Wheel by the WVU S.P.A.C.E. Club, the WVU MARS Rover Robotic Team, IR Photo-Booth and FIRST Robotics by NASA IV&V ERC, and Solar Telescopes by the Central Appalachian Astronomy Club (CAAC).



*Pictured above:
Dr. Kerri Phillips*



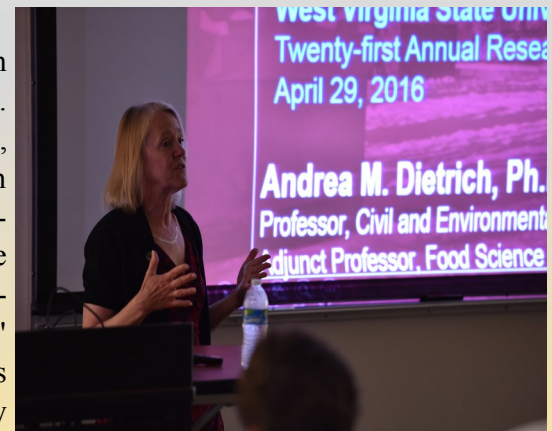
*Pictured far left:
Robert Strong,
SMART Centre*

*Pictured left: Stu-
dent presenters
and judges*

West Virginia State University Hosts Research Symposium

Submitted by: Dr. Naveed Zaman

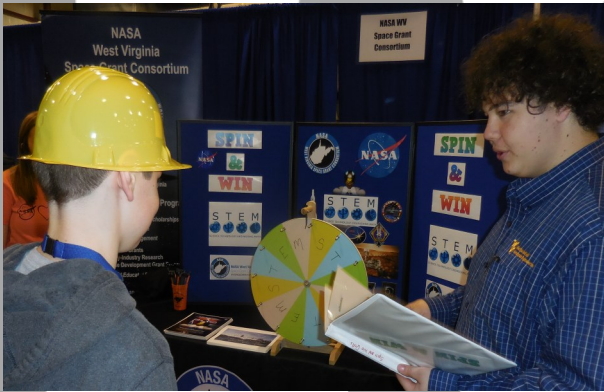
West Virginia State University (WVSU) held its annual Research Symposium on Friday April 29, 2016. The morning session included a keynote address by Dr. Andrea Dietrich (Virginia Tech), presentations by Dr. Majid Jaridi (Director, NASA WVSGC) and Mr. Al Najjar (CEO and President of the Clay Center). In the afternoon session, eleven NASA WV Space Grant research scholarship students presented their research. In addition, there was a presentation by the WVSU S.P.A.C.E. student organization. "The symposium provides a public forum for our students to share their scientific research with a wider audience," said Dr. Naveed Zaman, interim dean of WVSU's College of Natural Sciences and Mathematics. "When students become part of a research group, it not only reinforces their scientific skills but makes them feel like part of a family, so this is also a celebration of their hard work and accomplishments."



Dr. Andrea Dietrich

8th Grade Career Day in Morgantown, WV

The annual 8th Grade Career Day of Monongalia County, held every spring at the Mylan Park Expo Center, encourages 8th grade students to start considering their career path as they prepare to graduate to high school. This year marked the 10th career fair for the county. Almost 800 students from Monongalia County attended the event on April 13, 2016, where they viewed 86 exhibits. Professionals from a variety of North-Central WV businesses prepared educational activities and instructional materials for students of Monongalia and surrounding counties.



Two members from WVU's S.P.A.C.E. Student Organization helped with "STEM Spin The Wheel!" at the NASA WWSGC booth, where students were challenged with questions in science, technology, engineering, and mathematics (STEM). Students were engaged, and enjoyed learning

Pictured above: Nakeisha Wilson and Trinity O'Neal from South Middle school concentrate on their STEM question.

Pictured left: WVU student, Alex Wilson, asking a question.



Bluefield State College Hosts Science Day

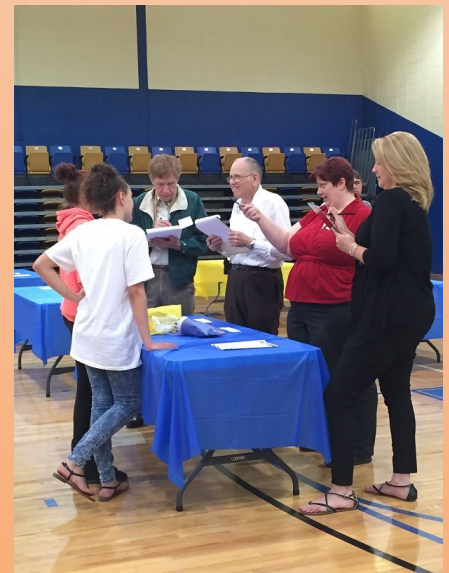
The Biomedical Club at Bluefield State College, in an effort focused on increasing student enrollment in STEM majors, hosted its first Science Day at the College on April 18. Biomedical Club students envisioned and developed the Science Day program and served as mentors, helping 7th grade students from Southside School in McDowell County in this initiative. The actual science project chosen for Science Day was an "egg drop" competition.

The day's activities at BSC included numerous recruitment outreach opportunities, featuring the Science Day competition and awards program, robotics demonstrations, campus tours, meetings with admission and financial aid counselors, and free lunch for all students.



Pictured above: Southside seventh grade students peer upward as an "egg drop" competition begins on the Bluefield State College campus.

Pictured right: Southside seventh grade students (left) explain their science project to (left-to-right) BSC Science Day judges James Harrison, Henry Miller, Dr. Julie Kalk (all BSC faculty members) and Jana Brown (WVVA TV Bluefield Beckley WV, Chief Meteorologist).



Bluefield State College Robotics

The Bluefield State Robotics team was founded in 1993. Each year during the summer, students from this team compete at the annual International Ground Vehicle Competition (IGVC). The objective of this competition is to design and prepare a robotic vehicle to navigate through an autonomous course, waypoint navigation, and software challenges. Their newest autonomous robot is APOLLO. Many of the design features for APOLLO have never been seen in any vehicle at the IGVC. These innovations include parallelism, the ability to operate in severe weather conditions, and modularity.



In April, the BSC Robotics Team presented APOLLO to the Board of Directors at the Board's spring meeting. They also brought APOLLO to NASA S.P.A.C.E. Day.

From June 3-6, 2016, BSC took APOLLO to the 24th Annual IGVC at Oakland University in Rochester, MI. While there, they placed 4th in the Advanced Auto-Nav Challenge, 1st in the Basic Auto-Nav Challenge (where they beat the next team by 24 seconds), and 2nd in the Design Competition. In the overall competition, they took the 2nd place Grand Award.

For more information on APOLLO, visit: <http://www.igvc.org/design/2015/2.pdf>.



Pictured left: BSC Robotics team at WVSGC Board of Directors meeting

Pictured right: a young girl drives APOLLO at NASA S.P.A.C.E. Day



The Science Behind Zip Lines

The Explore STEM Concepts Related to Zip Lines workshop was held on Saturday March 5, 2016 from 10:00 AM-3:30 PM at North Marion High School. There were 15 West Virginia middle and high school teachers, one teacher from Columbus, Ohio, and a representative from the Oglebay Institute in attendance. During the workshop, participants had four different lessons: Kinematics, Design of a Zip Line, Energy Methods, and Engineering Design Process. Participants enjoyed the interactive experience of the workshop, and felt confident about adding STEM to their curricula and implementing it in their own schools.



Participants collecting data

2016-2017 Award Winners

Undergraduate Research Fellowship

Fairmont State University

Brittany Bonnett

Marshall University

Mark Adkins

Grayce Behnke

Justin Conte

Drew Foglesong

Samantha Garretson

Shepherd University

Kyle Clark

Sierra Fowler

Marshall Hoffmaster

Wheeling Jesuit University

Lucy Hritzo

Brett Szeligo

West Virginia University

Stephen Cavanaugh

Domenic Cipollone

Ryan Mezan

Kerwin Moreland

Esther Raub

Emily Stiner

Graduate Research Fellowship

Marshall University

Deborah Amos

Rachel Murphy

Kasey Osborne

Jacaline Parkman

Sean Sovine

Dakota Ward

West Virginia University

Stephen Birt

Dylan Boehm

Scott Harper

Sean Lantto

Christopher Moore

Matthew Purtill

Amy Sardone

Bryan Shambaugh

Nathan Tehrani

Rachel Vass

College Course Development Grant

Dr. Tracey DeLaney, West Virginia

Wesleyan College

Dr. Weidong Liao,

Shepherd University

Dr. Mary Railing, Wheeling

Jesuit University

Dr. Laura Robertson,

Shepherd University

2016-2017 Award Winners

EPSCoR College–University Grant

Dr. Joseph Horzempa, West Liberty University and
Dr. Hongwei Yu, Marshall University

EPSCoR Research Seed Grant

Dr. Tesfaye Belay, Bluefield
State College

Dr. Rosalynn Quinones-Fernandez,
Marshall University

Dr. Xiaojuan Fan, Marshall University

Dr. Melinda Varney, West Virginia University

Dr. Jian Liu, Marshall University

Dr. Farshid Zabihian, West Virginia
University Institute of Technology

Dr. Xiaopeng Ning, West Virginia University

Extension and Public Outreach Grant

Ms. Sue Ann Heatherly, National Radio
Astronomy Observatory

Dr. Dimitris Vassiliadis,
West Virginia University

Dr. Sytil Murphy, Shepherd University

Dr. Charlotte Weber, Marshall University

Dr. Earl Scime, West Virginia University

Dr. Kathryn Williamson,
West Virginia University

Mr. Robert Strong, Near Earth
Object Foundation

K-12 Professional and Curriculum Development Grant

Dr. Kenan Hatipoglu, West Virginia
University Institute of Technology

Ms. Elizabeth Strong, Near Earth
Object Foundation

Dr. Charlotte Weber,
Marshall University

Research Initiation Grants

Dr. John Christian,
West Virginia University

Dr. Rico Gazal,
Glennville State College

Dr. Kumika Toma,
Marshall University

Upcoming Events

- NASA Day at the Black Bear Ball Park
- Mid Atlantic Regional Meeting
- Women & Technology Conference
- WV Science Teachers Association Conference
- Seeding Your Future Conference

July 10, 2016

September 29-October 1, 2016

October 6-7, 2016

October 27-29, 2016

October 29, 2016

Community and Technical College Systems of WV



Pictured from left to right: David Stoffel, David Mathers, Breanna Haught, Aaron St. Clair, Anthony Hanner, Maryam Khodaverdi, Marcus Fisher

From May 23-27, WV Statewide Partnership to Advance Community College Education in STEM (WV SPACES) held courses in systems engineering (led by Mr. Marcus Fisher, NASA IV&V) and cybersecurity (led by Dr. Roy Nutter, WVU Lane Department of Computer Science and Electrical Engineering) in Morgantown, WV. The systems engineering course demonstrated the hands-on integration of multiple components of STEM fields, specifically utilizing online systems engineering modules that have been developed by NASA. The cybersecurity course covered basic components of cybersecurity, net-

working, operating systems, and systems administration. WV SPACES offers opportunities to community and technical college faculty and students that will assist them as they seek meaningful educational opportunities and future jobs in STEM fields.



Front (left to right): David Mathers, Jenny Dawkins, Tricia Hoover, Abraham Falsafi, Dr. Majid Jaridi

Back: (left to right): Bob Hayton, Dr. Roy Nutter, Ronald Richter, Anthony Hanners, Adam Beatty

Share your Story!

Contact NASA WVSGC to share your story and keep us updated on ongoing events. We would love to feature you in our next issue!



NASA WVSGC

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