Message from the College Dean:

I am excited to share with you that the College of Natural Sciences and Mathematics had a very successful 2017. The College earned approvals for exciting new programs; a Master of Science program in Computer Science and a Bachelor of Science program in Engineering. Another exciting programmatic news item is that the department of Mathematics and Computer Science has started a collaboration with Ningbo University of Technology (NBUT) to offer BS in Mathematics (Computational Science option) program at NBUT in China.

Last year, the College faculty were awarded over $2,000,000 in new research grants. Currently, the College faculty has over $5,000,000 in ongoing research grants from various federal agencies (USDA, NSF, NIH, DOE etc.). The College faculty published 9 research papers in peer-reviewed journal in 2017. Dr. Sanjaya had a patent approved by the U.S. patent office in “Genetically Engineered Plants with Increased Vegetative Oil content”. Dr. Umesh Reddy is serving as the lead guest editor for a special issue of International Journal of Genomics.

The College, with the help from its faculty and students, held various competitions, events, and workshops including Research Symposium, SURE symposium, SPACE Day, Brimhall Science Bowl, high-performance computing workshop, and Fulbright workshop.

I am also proud to report our students’ achievements in 2017. The ACS student club won “Commendable Ratings” and “Green Chemistry Award”. The WVSU SPACE club students took part in NASA’s Rocksat-X program which involved building a payload which was launched from NASA’s Wallops Island facility. The College students made over sixty (60) research presentations at various local, regional and national events. Three College students won awards in their respective categories at 1890 ARD Biennial Research Symposium in Atlanta, GA. In September, six students were awarded NASA research scholarships for AY 17-18. Edgar Lopez was one of the fifteen students selected nationwide by the National ACS for its Leadership Institute. Alejandro Ramirez-Garcia was accepted in PhD program at ETH-Zurich (a top-10 best university in the world).

Finally, a couple of personnel news items in the department of Chemistry. Professor Anthony Moncrief (Chemistry) resigned to accept a position in industry. He was replaced by Ms. Kristen Lewis. Also, Ms. Melissa Charlton-Smith has joined the department of Chemistry as lab manager.
New Programs in CNSM

The Department of Mathematics and Computer Science has added Computational Science option to its Bachelor of Science degree in Mathematics. This new option is multidisciplinary in nature as the students take foundational and advanced courses in Mathematics, Computer Science, and Statistics. Computational Science is an emerging and exciting field and its importance has been amplified by a progressive surge of big data in the digital age.

The West Virginia Higher Education Policy Commission approved WVSU’s requests to offer a Bachelor of Science program in Engineering and a Master of Science program in Computer Science. After approval of these programs from the Higher Learning Commission (WVSU’s accrediting commission), WVSU is planning to start these two programs in AY 2018-19.

Initially, WVSU is planning to start programs in Chemical Engineering and Civil Engineering. Engineering is not entirely new to the University as WVSU currently has a 2+2 program with WVU in Civil, Mechanical, and Industrial Engineering. After the program is established, WVSU will be seeking ABET accreditation.

Computer Science at WVSU has been one of the fastest growing programs. Currently, it is the second largest program in the College. A Master of Science program in Computer Science will strengthen not only the undergraduate CS program but also the research capabilities at WVSU.

WVSU Offers Program in China

Starting Fall 2017, WVSU and NBUT (China) have started a collaborative program in Bachelor of Science in Mathematics with Computational Science option. Currently, the collaborated instruction mode is 4+0, that is, the students in the program will finish their education in China while taking advantage of teaching resources from WVSU. The department of Mathematics and Computer Science will provide faculty to teach 15 core courses (in Mathematics, Computer Science, and Statistics) in NBUT. Seventy seven (77) students at NBUT have enrolled in the program for the first year.

President Jenkins and Provost Jayasuriya worked hard to set up this collaboration. In September 2016, both visited NBUT to sign the agreement. On June 25th, 2017, Provost Jayasuriya flew to China to attend NBUT commencement and strengthen the partnership. The program’s opening ceremony was held on September 26 on NBUT campus, where President Jenkins (through a recorded speech) welcomed the students in the joint program and WVSU community. On October 16, a team from NBUT consisting of administrators, faculty, and staff visited WVSU to strengthen ties between the two Universities.
WVSU Research Day
On April 28, the College hosted three events; 22nd Annual Research Symposium, NASA Space Day, and USDA Symposium.

The day started with keynote address by Dr. David Atkins of NASA’s Caltech JPL. It was followed by poster presentations by WVSU NASA Space Grant Scholars; Morgan Bright, Kimberley Cavender, John Lucas, Chandra Martin, Victoria Ramey, Claire Shanholtzer, Danford Smith, and David Stone and WVSU Research Rookies; Hunter Allif, Ky’Achia Atkins, Sarai Cook, Tat’Ana Dillard-Sims, Brittany Graham, Chantz Hopson, Morgan Jividen, and Joshua Ricket.

The NASA SPACE day activities ran from 10am to 4pm and featured many interactive activities and displays from NASA Langley and NASA IV&V. An exhibit featuring WVSU alumna Katherine Johnson, whose accomplishments at NASA were the basis for the film “Hidden Figures,” was on display inside Hamblin Hall. The NASA Langley’s travelling exhibit included a robotics station, rocketry station, a flight simulation and an exhibit on journeying to Mars. There were also a station where participants could build their own satellite out of Legos, and an exhibit on the science of cycling that includes a wooden bike, fat tire bike and electric bike. In addition, NASA’s IV&V hosted bottle rocket launches. About 1000 students from regional schools attended the SPACE day.

The afternoon featured USDA Symposium where Dr. Muquarrab Qureshi (Deputy Director, USDA-NIFA) was the chief guest. Researchers from WVSU presented their research.

The NASA Space Day was made possible by over 75 volunteering students and faculty from the College of Natural Sciences and Mathematics.
Faculty Activities & News

Publications

The College faculty had nine journal publications listed below. For detailed citations, please visit the College website.

- Xi Zhao et.al “Laser-based cross-section measurement of cold-formed steel members”
- Nimmakayala, Reddy et al. “Genetic Diversity in the Desert Watermelon Citrullus colocynthis and its relationship with Citrullus Species as Determined by High-frequency Oligonucleotides-targeting Active Gene Markers”
- Bhuiyan & Leon “Probabilistic Models for Critical Responses of High-rise Buildings”
- Barney, “Definition and Revision of the *spumarius* Species-Group of North American *Pachybrachis* Chevrolat”
- Barney “Definition and Revision of the *luridus* Species-Group of North American *Pachybrachis* Chevrolat”
- Linwei et al. “An Event-Related Potential-based Adaptive Model for Telepresence Control of Humanoid Robot Motion in an Environment with Cluster Obstacles”
- Nimmakayala, Reddy et al. “Genetic Resources of Watermelon”
- Nimmakayala, Reddy et al.“Comparative Genomics of the Cucurbitaceae”
- Reddy, Nimmakayala et al. “Genome-wide divergence, haplotype distribution and population demographic histories for Gossypium hirsutum and Gossypium barbadense as revealed by genome-anchored SNPs”

Grants

In 2017, the College faculty secured over $2,000,000 in grants from various sources. Here is a list of some of the major new grants.

- Dr. Sanjaya’s Lab
  - $250,000, “Biological removal technology”, (USDOE)
  - $300,000 “Genetic Improvement of Seed Storage Compounds in Oilseed Plants” (USDA)
  - $495,313 Improvement of Switchgrass of Energy (USDA)
- Dr. Padma Nimmakayala’s Lab
  - $600,000 “Strengthening Vegetable Improvement Center with genomic selection tools for nutraceuticals and fruit quality” (USDA)
  - $300,000 “Harnessing whole genome sequence of pepper for association mapping of novel fruit quality phenotypes with enhanced phytonutrients” (USDA)
  - $241,464 sub-award on collaboration grant with Alcorn State University
- Dr. Gerald Hankins: $300,000 “Harnessing whole genome sequence of pepper for association mapping of novel fruit quality phenotypes with enhanced phytonutrients” (USDA)
- Dr. Fultz: $44,000 “Summer Undergraduate Research Experience” (WVHEPC)
Here are some other noteworthy activities from 2017.

- **Dr. Sanjaya's** patent application on “**Genetically Engineered Plants with Increased Vegetative Oil content**” submitted to US Patent Office is approved (patent # US 9,657,304) on 05/23/2017.

- **Dr. Umesh Reddy** will be serving as the lead guest editor for *International Journal of Genomics* special issue on *Domestication and Speciation Genomics as the Primer to Create Novel Crop Genetic Variation*. **Dr. Padma Nimmakayala** will also be serving as a guest editor.

- **Dr. David Huber** won the 2016-17 “**WVSU Teaching Award**”. This award is given to the faculty member who exhibits commitment to learning and excellence in classroom.

- **Dr. Krasnansky** was awarded a course development grant from NASA Space Grant Consortium to develop courses that would give students knowledge and skills needed to create and build innovative electronic devices with special emphasis on designs suitable for Cosmic explorations.

- **Dr. Linwei Niu** has been granted tenure as associate professor of Computer Science.

- **Dr. Sean Collins** has been promoted to associate professor of Biology.

- **Dr. Andrew Schedl** presented "**Classification and ages of landslides within Valles Marineris**" at 48th Lunar and Planetary Science Conference in Texas.

- **Dr. Thomas Guetzloff** completed a Marathon in Hawaii. He now has completed at least one Marathon in each of the 50 states of the USA.

- **Dr. Sridhar Malkaram** organized a workshop on using high performance computing on April 14, 2017. This workshop focused on XSEDE computing resources, hardware and software available on Stinger HPC, and applications of High Performance Computing.

- The College hosted the annual Dow Chemical “**You be the Chemist Challenge**” on April 21. Forty five (45) students from ten (10) regional middle schools took part in the competition.

- SURE (Summer Undergraduate Research Experience) 2017 was a great success. A total of twenty seven students (including some high school students) took part in this 8-week research program and made presentations in the SURE Symposium held on July 28. Twelve (12) CNSM faculty served as research advisors to these participants.

- On November 3 (for the sixth consecutive year), the College hosted the Brimhall Science Bowl for RESA II and III. Approximately 100 students (20 teams) from nine high schools took part in the competition. George Washington High School won the overall competition. The Science Bowl is named in honor of the late physics professor Dr. Jim Brimhall; who began teaching at WVSU in 1966 and later served as vice president of administration for 11 years.

- On December 5, **Dr. Sonya Armstrong** organized a “**Fulbright Scholar Program Workshop**”. Mr. Grant Stream-Gonzalez (Outreach and Recruitment Analyst, for the Fulbright Scholar Program) talked about Fulbright opportunities for students, faculty and administration. Students and faculty from WVSU and Marshall University, and WVU administrators took part in the day-long presentation.
Students Activities and News

**SPACE Club**
This year, a team of WVSU students joined a collaborative effort with other WV academic institutions to design, build and launch experiments into space as a part of RockSat-X 2017 (the most advanced of NASA’s three-phase rocket program for students) program. On August 13, at 5:30 am a payload built by the WVSU team was launched from NASA Wallops Flight Facility on Terrier-Improved Malemute rocket. It reached an altitude of 150 km and descended into the Atlantic Ocean. The payload measured radiation levels, the strength and direction of Earth’s magnetic field, and the ozone concentration during the 96 miles flight of the rocket. Under the guidance of Dr. Krasnansky (Physics), the WVSU team consisted of James Davis, Caleb Eskins, Justin Graham, Jacob Moore, Saira Rizwan, Umer Rizwan, Danford Smith, Justin Spradling, Jaime Veronda and Jonathan Musselwhite.

**ACS Club**
Thanks to exceptional flood relief efforts by the WVSU ACS chapter under the leadership of Dr. Michael Fultz, WVSU received a Partners for Progress and Prosperity Regional Award from the American Chemical Society. The award includes $1,000 of award money which will be used for further relief activities.

The ACS-WVSU chapter was awarded “Commendable Chapter Rating” and “Green Chemistry Award” in 2017 by the National ACS. The chapter was also granted “Community Interaction Grant” and “New Activities Grant” (2 students serving as PI; one on each grant). The Chapter will be recognized at the National ACS meeting in New Orleans in March 2018.

- Three CNSM students won awards in their respective agricultural and environmental research competitions at the Association of 1890 Research Directors (ARD) 2017 Biennial Research Symposium, held in Atlanta, Ga., April 1-4. Lav Yadav took the first place in the Plant Health and Production and Plant Products graduate student competitive oral presentation category. Edwina Barnett and John Lucas took first and second place respectively in the Renewable Energy, Natural Resources and Environment undergraduate student competition poster category.

- Thirteen (13) CNSM students showcased their research at the State Capitol as a part of 14th Annual Undergraduate Research Day on February 24. The students who presented include: Hunter Aliff, Hunter Armstead, Edwina Barnett, Morgan Bright, Miranda Buckley, Kimberly Cavender, Leslie Garcia, Bandana
Ghimire, Dylan Jayasuriya, John Lucas, Saira Rizwan, Umer Rizwan, and Elijah Roberts.

WVSU students at URDC with President Jenkins

- Edgar Lopez Torres was one of the 15 students selected from all across the United States selected by the American Chemical Society for its 2018 ACS Leadership Institute.

Alumni News

- Dr. Sherine Obare (Chem., ’98) has been appointed Associate Vice President for Research at Western Michigan University.
- Aldo Almeida (MS Biotech. ’13, Reddy), currently in PhD program at Copenhagen University published in eLife (6.28 IF).
- Alejandra Alvarado (MS Biotech. ’14, Reddy), seeking PhD at Max Plank Institute published in Plant Physiology (7.72 IF).
- Taylor Ferrell (BS Math. ’15) recently joined WVDA as a program assistant for Veterans and Warriors to Agriculture.
- Alejandro Ramirez-Garcia (MS Biotech, ’17, Huber) has started his PhD program at ETH-Zurich (top-10 research university)

CNSM Graduates (2017):

**MS in Biotechnology**
- Alejandro Ramirez-Garcia
- Bandana Ghimire
- Mickey Z. King-Fowler
- Vadesse LhiLhi Niundou
- Krittika Tonapi
- Iféoma Rosemary Ugwuanyi
- Lav Yadav

**BS in Biology**
- Roark Acord
- Miranda Buckley
- Joshua Caiquo
- Tonya Edwards
- Taylor Farris
- Sara Ferguson
- Chelsey Parkins
- Saira Rizwan
- Umer Rizwan
- Mitchell Rowell
- Shawn Smith
- Justin Spradling
- Brett Strahin
- Summer Sword

**BS in Chemistry**
- Morgan Bright
- Tigist Geberehiwot
- Megan Guetzloff
- Shealyn Shafer

**BS in Computer Science**
- Roark Acord
- Taylor Hurst
- Jordan McMillian
- Tesfahun Negash

**BS in Mathematics**
- Brandon Wright
- Jasmine Withrow (Math Ed.)
Featured Graduates

Umer Rizwan (BS Biology)

Umer Rizwan was born in Pakistan but moved to Saudi Arabia with his parents when he was 5. He joined WVSU in 2014 for his B.S. (pre-med) program in biology. One of the major reasons, he and his sister (Saira) selected WVSU was that the higher education was very affordable here. Umer said, “It has been the best decision of my life. WV has the nicest people I’ve ever met. It's beautiful. WVSU has a high quality of education, decent facilities, great faculty and a wonderful community. My education here was ample preparation for the MCAT and the activities with student organizations on campus got me an interview at WVU SoM. You won't be handicapped here while charting your path upward. State is a great value university and among WV's best kept secrets”.

Umer who actively took part in DNA, SPACE, and ACS Clubs’ activities has been selected by WVU School of Medicine (via early decision program) to start in Fall, 2018.

Alejandro Ramirez-Garcia (MS Biotech.)

Alejandro was born and raised in Peñon Blanco (Durango, Mexico), about 350 miles south of the Texas US border. He got his B.S. degree in biochemical engineering from the Durango Institute of Technology (DIT) in 2014. While being student at DIT, he participated in an internship at Sao Paulo State University in Brazil. He started his MS in biotechnology program at WVSU in 2015.

About his experience at WVSU, Garcia states, “I really enjoyed the MS program mainly because since the university is not very big and the professors have enough time to talk with the students or provide guidance personally”. He adds, “It is clear that West Virginia State University is not one of the biggest and most recognized universities in the US, however, the MS in biotechnology program is very complete and, in my opinion, can prepare you to face big challenges such as getting nice jobs in the private and public sector or to pursue a doctoral degree in one of the world’s best recognized universities such as the ETH. Also, the professors of the program are well prepared and all of them are experts in their respective research areas”.

(Dr. David Huber was Alejandro’s MS advisor)