



JMU Research, Scholarship & Creative Endeavors

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Greetings from Harrisonburg!

The Washington Post [recently published an article](#) on the [Valley Scholars Program](#), a JMU initiative designed to help local, talented children become the first in their families to earn their college degree. The program began in 2014 in area middle schools, and this academic year includes the first cohort of Valley Scholars to enter college. Thirty-two students completed the program and all are attending college in Virginia, including 26 students at JMU.

JMU's Center for STEM Education & Outreach hosted the Virginia Science, Technology, Engineering, and Math (STEM) Education Commission for their inaugural meeting on August 7th. [Established by Governor Ralph Northam](#) in July, the charge of the Commission is to "develop a State STEM plan to create a unified statewide vision and dynamic set of shared goals to strategically inform how we prepare Virginia's students for the STEM jobs of the future." JMU offers [a number of academic programs in STEM](#) and hosts the [Center for STEM Education & Outreach](#), led by director Kerry Cresawn.

In support of a \$1 billion investment by Merck in their Elkton manufacturing facility, James Madison University and Blue Ridge Community College are working together to develop "[curriculum and training programs centered on biotechnology](#), process engineering and workforce development." This expansion will push Merck's workforce to more than 1,000 employees at the Rockingham County facility, and the efforts of JMU and BRCC to create new concentrations and boot camps focused on the manufacturing sector will ensure the global pharmaceutical company has a well-trained workforce for years to come.

Office of Research & Scholarship
James Madison University



Senator Tim Kaine visited Riverhill Farms in Port Republic to tour a hemp field and discuss how an industrial hemp economy can grow in Virginia with farmers, economic development professionals, local entrepreneurs, advocates for the hemp industry, and JMU faculty and students conducting both lab and field research on industrial hemp. Pictured with Senator Kaine (right) is Dr. Sam Morton of the JMU Engineering Department.

Faculty Grant Awards

For a monthly listing of recent faculty grant awards, please [visit the JMU Office of Sponsored Programs website](#). Here are some notable awards from July 2019:

Jolynne Bartley (Institute for Innovation in Health and Human Services) received two \$105,000 awards from the Virginia Department of Social Services Healthy Families Shenandoah County and Page County to provide ongoing home visiting services that improve health outcomes for at risk families and children, and guide parents to make positive choices in all areas of life which will impact children and the community.

Dennis Blanton (Sociology and Anthropology) received \$14,878 from the Woodrow Wilson Presidential Library and Birthplace to provide further archaeological investigation of the rear yard of the structure known as The Manse at the Woodrow Wilson Presidential Library and Birthplace.

Christopher Clinard (Communication Sciences and Disorders) received \$449,999 from the National Institutes of Health to understand how aging affects the representation of sound frequency in the human auditory system.

Samy El-Tawab (School of Integrated Sciences), Nathan Sprague (Computer Science), and Michael Stewart (Computer Science) received \$120,000 from The Jeffress Memorial Trust to employ machine learning algorithms and user interface design principles to develop autonomous vehicle systems that provide the same sort of passenger-aware interactions.

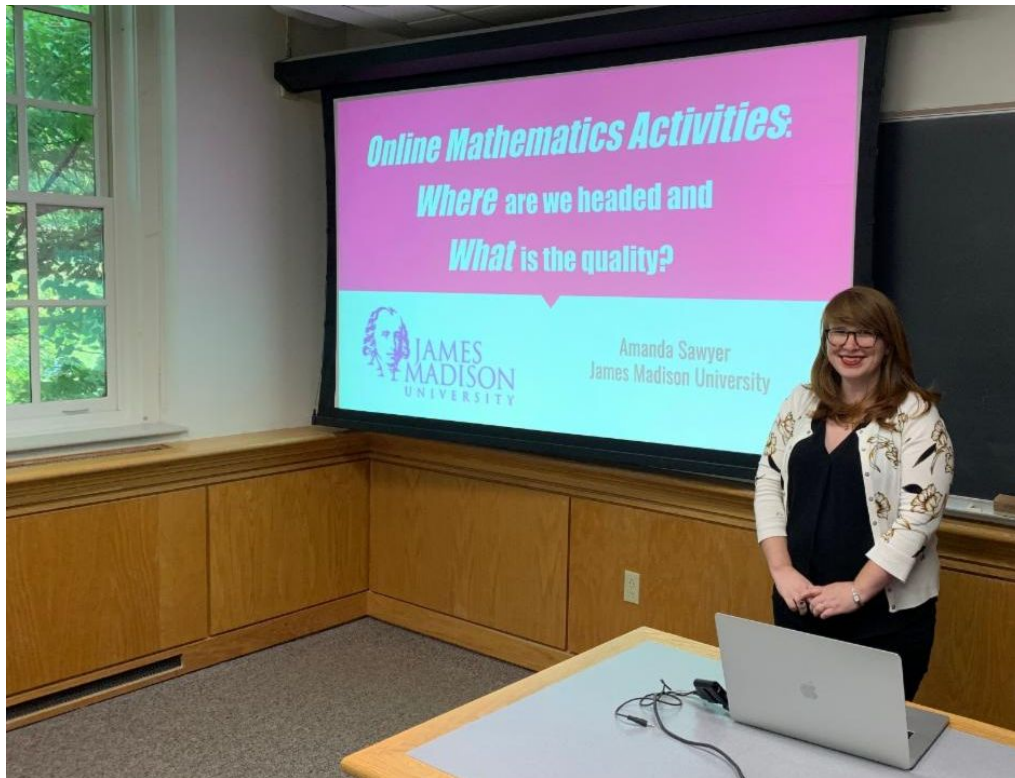
Jonathan Miles (School of Integrated Sciences), Keith Holland (Engineering), and C.K. Lee (Management) received \$20,000 from the National Renewable Energy Laboratory (NREL) to solve technical and social challenges related to product development, deployment, and marketing, while addressing broader educational objectives pertaining to wind energy.

Minah Oh (Mathematics and Statistics) received \$100,000 from the National Science Foundation to perform multigrid analysis for axisymmetric $H(\text{curl})$ and $H(\text{div})$ problems

including the time harmonic Maxwell equations and to provide a finite element analysis for the axisymmetric Hodge Laplacian.

Joshua Streeter (School of Theatre and Dance) received \$3,066 from the Virginia Commission for the Arts to support two summer training institutes for K-12 teachers, teaching them how to integrate the arts and drama into the classroom.

Education Professor Lectures at Bucknell University as Distinguished Visiting Professor



Middle, Secondary, and Mathematics Education Department faculty member, Amanda Sawyer, served as a Distinguished Visiting Professor in Bucknell University's Department of Mathematics. In this role, Sawyer implemented a faculty presentation and a student workshop teaching preservice teachers how to critically analyze mathematics curriculum found online. This work is based on Sawyer's own research, which "found that 89% of mathematics teachers across all years of experience are using social media websites like Pinterest and Teachers Pay Teachers (TpT) weekly (Shapiro, Sawyer, Dick, and Wismen, 2019). However, less than one percent of the mathematical materials found on TpT and Pinterest supports students' development of the highest level of cognitive demand (Sawyer, Dick, Shapiro, Wismen, 2019; Dick, Sawyer, Shapiro, Wismen, in review)." Sawyer states that those providing instruction for the next generation of educators "...must teach preservice and inservice teachers how to critically analyze the materials they find online."

Industrial Design Students Present Furniture Designs in Las Vegas



This past July, JMU School of Art, Design and Art History (SADAH) students Savio Duong ('19) and Bryce Simpson ('20) and their faculty instructor, Sean Yoo, were finalists at the National Freshwood Competition, an event hosted by the Association of Woodworking and Furnishing Suppliers that celebrates construction and design achievements. The competition provided the students with opportunities to compete against top-tier artists from universities across the U.S., as well as networking opportunities to meet and collaborate with working professionals based in the U.S. and around the world. As finalists, the students and Yoo received an all-expenses paid trip to Las Vegas [to present their unique furniture designs](#).

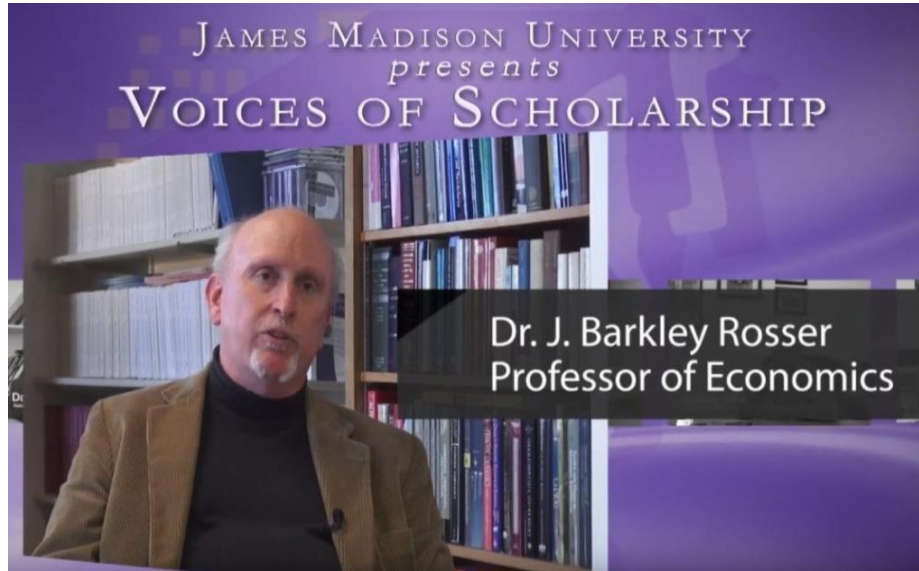
Virginia Clean Cities Awarded U.S. Department of Energy Funding



Interim Vice Provost for Research & Scholarship Keith Holland joined Virginia Clean Cities Executive Director Alleyn Harned (pictured) for an event in Herndon [announcing the largest electric school bus initiative in the country](#). The first phase of the effort, led by Dominion Energy, set a goal of 50 electric buses in Dominion's Virginia service territory, growing to 1,000 operational electric school buses by 2025. This announcement aligns with a long-standing focus area of Virginia Clean Cities -- assisting school districts

transition to clean transportation options and follows a \$670,000 Department of Energy award in support of the Mid-Atlantic Electric School Bus Experience Project. This funding will allow VCC to “provide a user level introduction to electric school bus technology in the region, provide a wide range of stakeholders with needed information about electric school buses, allow school districts to gain experience with electric school buses from multiple manufacturers for an extended period time, evaluate vehicle performance, and provide findings that can be used to intelligently advance the domestic fuel technology.”

COB Faculty Elected President of Professional Society



Barkley Rosser, a professor of economics, was recently elected President of the Society for Chaos Theory in Psychology and the Life Sciences (SCTPLS). View the [Voices of Scholarship interview](#) with Rosser, where he discusses the impact of his research on U.S. economic policies, and how JMU balances academic research with a commitment to education inside the classroom.

Congratulations to Yvonne Frazier! 2019 Governor’s Honor Award Winner

Yvonne Frazier
Manager - Healthy Families of Page and Shenandoah Counties

2019 Winner of the Governor's Honor Award for
Enhancing the Prosperity and Quality of Life in Rural Virginia

Institute for
INNOVATION
in Health and Human Services
JAMES MADISON UNIVERSITY

From the College of Health and Behavioral Studies, “For the past 12 years, Frazier's innovative leadership [of [Healthy Families of Page and Shenandoah Counties](#)] has made a significant positive impact on the health of hundreds of rural Virginia families. The College of Health and Behavioral Studies and the Institute for Innovation in Health and Human Services are incredibly proud of this recognition!”

JMU WRTC to Host Feminisms and Rhetorics Conference

Faculty from the Department of Writing, Rhetoric and Technical Communication (WRTC) will host the [2019 Feminisms and Rhetorics \(FemRhet\) Conference](#) November 13th through the 16th. Conference co-chairs Jen Almjeld and Traci Zimmerman provided plenty of opportunities for both undergraduate and graduate students to engage in the planning process, including students enrolled in a facilitating engagement course who will facilitate a town hall meeting during the event. A [story previewing FemRhet 2019](#), shares that “Scholars will come together to present 112 distinct sessions, including an installation by an academic-themed rock band, a human-scale boardgame exploring queer infertility and a panel discussing the rhetorics of women’s bodies, with a special emphasis on Serena Williams.”

CISE Faculty Receive Funding for Autonomous Vehicle Project

Faculty members Samy El-Tawab (School of Integrated Sciences), Nathan Sprague and Michael Stewart (Computer Science) received a \$120,000 award from the Jeffress Memorial Trust to advance a project examining issues surrounding the deployment of autonomous transportation systems within retirement communities. From the project summary, “[The JMU research team] believe that a successful user interface in this domain will require a high level of passenger awareness. External and in-vehicle sensors will monitor the position, activities, and mental state of passengers. The central research questions that [will be considered] are: 1) How can machine learning models be used to extract relevant passenger information? 2) How should an [autonomous vehicle] user interface incorporate passenger monitoring data to provide safe and reliable mobility service for the elderly?”

The faculty also lead JMU's [Autonomous Vehicles class](#) hosted by the JMU X-Labs.

Modeling the Molecules



Chemistry students typically have trouble visualizing molecules on 2D surfaces like a textbook. JMU X-Labs' Augmented/Virtual Reality class set out to solve this problem. Through a multidisciplinary approach, the students [created an app designed to provide a more interactive learning experience](#). The app is being tested in chemistry classes at JMU,

and the developers are working with textbook distribution companies in the hopes of integrating it into other classroom settings.

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