

virginia
**COURSE
REDESIGN**
UNIVERSITY OF
VIRGINIA

interactive
**VIRGINIA
TECH**
JAMES MADISON
**COLLABORATIVE
RESEARCH**
collaboration
competitiveness
engage
suitable
technology
opportunity
consortium
initiative mathematics

4-VA at JMU presents 2012-
MOVING 2013

FORWARD

economic
development
online
art articulation
industrial
design
**DEGREE
COMPLETION**
success
robots
vision
cisco
biology
immersive
exploration
scale-
grants
GEORGE MASON

impact higher education
entrepreneurship
science
vision
cisco
biology
immersive
exploration
scale-
grants

student
outcomes
art
up
mini grants
beam
kubi
double
student
success

**SHARING
COURSE**

forward thinking
engineering
experience

educational
technology

What people are saying...

It has been an honor to be engaged with The 4-VA initiative from its inception to date. I have seen the true power of partnership between government, education, and industry coalesce around a common goal. Virginia understands the significance of higher education being the cornerstone of our country's economic growth, and through the strong leadership of Governor McDonnell, and the President's and senior leadership of the four founding institutions—JMU, UVA, GMU, and Virginia Tech—we are seeing transformation take place in a meaningful, sustainable way.

— Carol Stillman, Cisco Systems, Inc.

Though we just started this experience four weeks ago, I believe the variety of students' backgrounds and educations enriches the learning experience inside the classroom, especially when learning a challenging language like Arabic. My students at VT had different language skills and their participation with JMU students has had a positive impact so far.

— Israa Alhassani

With my unique background as being a practicing medical clinician coupled with my experience as a university educator, I am constantly looking for ways to make content more relevant for students. 4-VA provides me with the opportunity to further expand this mission.

— Erika Kancler, MD

Inside this Issue

What is 4-VA?

What is the 4-VA mission and how does it work at JMU?

3

Collaborative Research

Faculty and Students from different universities coming together to accomplish great things

5

Other 4-VA Research Grants

9

Course Sharing

Universities collaborating to offer students a wider range of courses

11

Course Redesign

Developing courses to utilize new formats for course offerings

13

Technology and STEM Subjects

Harnessing group knowledge and modern technology to bring courses into the present

17

Innovation, Collaboration, Entrepreneurship

Faculty, students, and community leaders design a collaborative innovation space

19

Degree Completion

Universities develop an offering to help non-traditional students complete a degree

21

Contact

Contact information for 4-VA staff, industry partners, and featured JMU faculty and Staff

22

What is 4-VA?

4-VA is a collaborative partnership between four Virginia universities. Its mission is to promote inter-university collaborations that leverage the strengths of each partner university in order to accomplish much more than any individual university could achieve alone. In addition, 4-VA strives to do the following:

1. decrease the cost of delivering instruction
2. expand access for all Virginians to programs preparing them for rewarding careers
3. increase research competitiveness
4. enhance the success rate of students in Science, Technology, Engineering, and Mathematics (STEM) courses and programs.

Unity is strength...when there is teamwork and collaboration, wonderful things can be achieved.

– Mattie Stepanek

History of 4-VA

IN 2010, the presidents of four universities combined forces with the governor, other members of the Virginian government and Cisco Systems, Inc. to launch 4-VA in response to the Governor’s Higher Education Commission and the Governor’s Commission on Economic Development & Job Creation.

The commissions are focused on education and innovation to “better position Virginia to create jobs and grow the economy.”

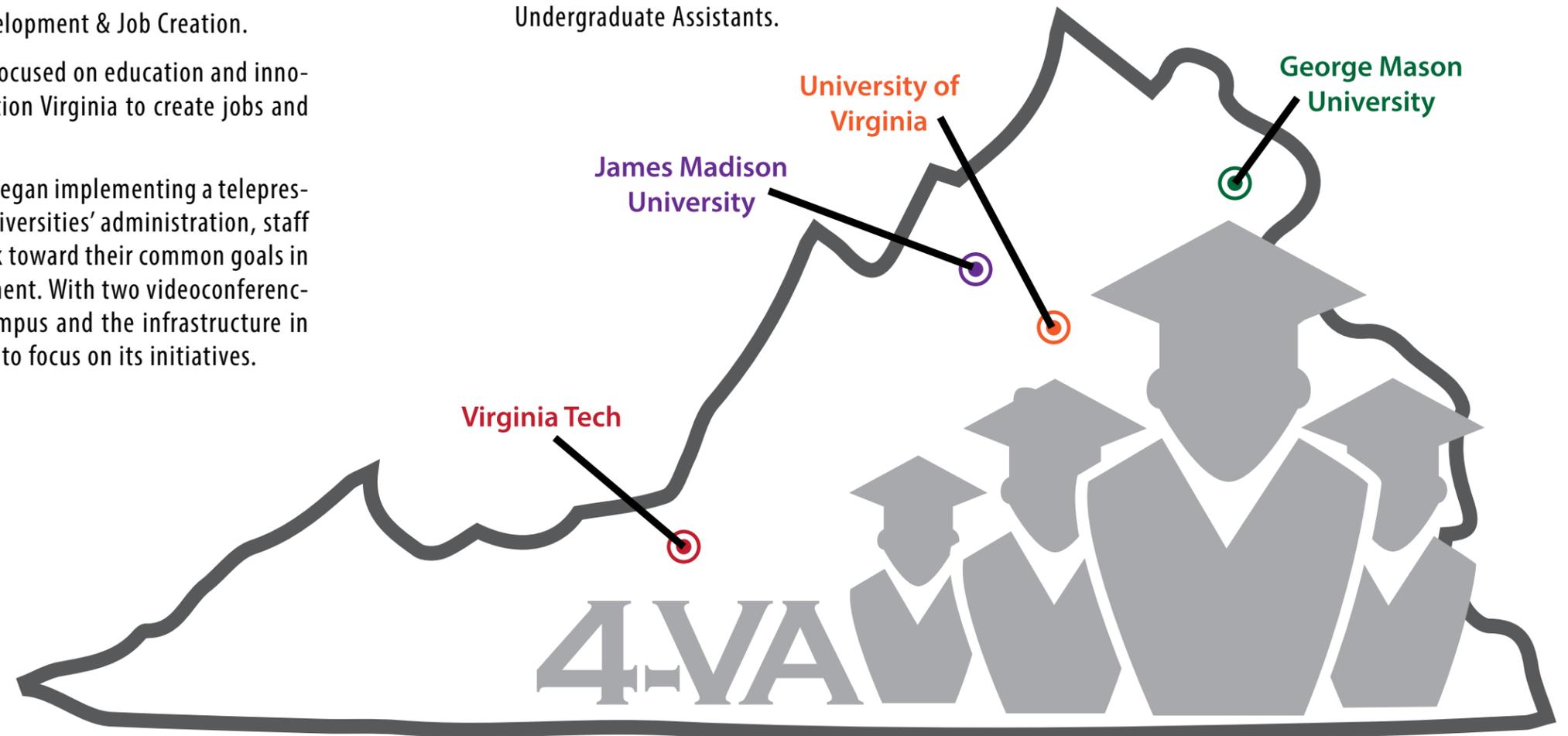
That same year, 4-VA began implementing a telepresence system so the universities’ administration, staff and faculty could work toward their common goals in a live virtual environment. With two videoconferencing rooms on each campus and the infrastructure in place, 4-VA was ready to focus on its initiatives.

4-VA at JMU

4-VA AT JAMES MADISON UNIVERSITY is housed under the Department of Information Technology and works closely with Dale Hulvey, the Assistant Vice President of Information Technology. Nick Swayne is the Director and Campus Coordinator. Kai Brokamp is the Assistant Director and also works closely with the 4-VA Graduate and Undergraduate Assistants.

The Board

4-VA’S DIRECTION is set by the management board, which consists of the four university presidents, Virginia’s Secretary of Education, the Executive Director of the State Council of Higher Education for Virginia (SCHEV), and Carol Stillman, the Business Development Manager for Higher Education for Cisco.



Universities Collaborating to Achieve Virginia’s Goals for Higher Education

Collaborative Research

Strength in numbers is a concept well-known in nature, and it applies to higher education as well. Collaborative research between the four 4-VA institutions has not only increased the interaction between faculties at each institution, but has also increased the competitiveness of their research.

Mini Grants of up to \$5,000 and Scale-Up grants of \$20,000 are awarded to faculty and staff members whose research will contribute to 4-VA initiatives related to research and instruction. With over \$100,000 invested in 27 research projects since October 2012, a \$100,000 return on investment has already been recognized.



Developing a Diagnostic Tool for the Next Generation

Principle Investigator:
Dr. Louise Temple



WITH OUTBREAKS of whooping cough on the rise in the United States—even with mandatory vaccinations—it has become increasingly important to detect this lung infection at its earliest stages.

With the assistance of Dr. Gordon Archer at Virginia Commonwealth University, Dr. Louise Temple, a JMU professor in the Department of Integrated Science and Technology, has started studying bordetella, the bacterium that causes whooping cough.

Focusing their research on isolating bordetella, Dr. Temple hopes to develop a diagnostic tool that will decrease the time it takes to diagnose the bacterial disease. This tool will also increase knowledge of the bacteria, allowing researchers to better understand how and why whooping cough infects humans and is spread to others.

Without the support of 4-VA, Dr. Temple said, “I might have been able to do a little bit on it, but I couldn’t have paid students in the summer, so we wouldn’t have gotten as far as we have and wouldn’t have had this really successful summer.” Dr. Temple said she is grateful for the opportunities 4-VA is providing in terms of creating opportunities for students and enabling the creation of relationships between universities.

Finding a Cure for Dry Eye



Principle Investigator:
Dr. Bob McKown



photo by AlantheBox

“Cloning this gene is the first step towards development of a treatment for dry eye in humans.”

DRY EYE is a fairly common condition, affecting roughly 35 million Americans. Those who have it typically produce tears of inadequate quality or quantity. Dry air, wind, allergies, medications, disease, aging, wearing contact lenses and spending long hours in front of a computer are just some of the potential causes of the uncomfortable sensations and blurred vision brought on by the condition. Artificial tears are commonly used as a temporary solution for dry eye, but what if there was a treatment that could stimulate new tear production?

With funding from both a 4-VA Mini Grant and a Scale-Up Grant, Dr. Bob McKown is working to find just that—a treatment for dry eye in dogs that could potentially develop into a new topical therapeutic for the treatment of dry eye in humans. A professor of Integrated Science and Technology at JMU, Dr. McKown is collaborating with Dr. Ian P. Herring from the VA-MD Regional College of Veterinary Medicine and the College of Veterinary Medicine at Virginia Tech.

A human tear protein called lacritin and the canine version of lacritin are at the center of Dr. McKown’s research. The goal of his Scale-Up Grant is to clone the canine gene for lacritin, produce the canine lacritin protein in bacteria, and purify it for animal studies. The purified protein will be sent to the College of Veterinary

Medicine at Virginia Tech and tested for stimulation of tear production in canines. If successful, this research could directly result in a treatment for canine dry eye, which would have an important impact on dry eye syndrome in humans as well.

“The safe and effective use of lacritin for treatment of dry eye in an animal model system would help advance development of this potential new drug into human clinical trials,” said Dr. McKown.

The two grants awarded to Dr. McKown have also provided the means to hire two student researchers to focus solely on the project. Cara Soyars and Alan Tate assisted with dog tear analysis in Dr. McKown’s lab at JMU during the summer of 2013.

Cloning this gene is the first step towards development of a treatment for dry eye in humans, an accomplishment that will improve the lives of many and demonstrate the power of collaboration in funding and research.





Soft Matter Research: Connecting Physicists across the Commonwealth

WHAT DO pharmaceuticals and cosmetics have in common with avalanches and lava flows? They are part of a large class of materials known as Soft matter—the focus of research led by Dr. Klebert Feitosa, a Physics and Astronomy professor at JMU. Soft matter is characterized by complex fluid behavior whose understanding will have deep implications for improvement of manufacturing processes, as well as predictions of natural phenomena such as avalanches, mudslides and lava flows.

You may be wondering, “What is soft matter?”

Soft matter is a term used to describe many systems that are disordered and fragile. Foams, paints, gels, grains, and emulsions are some very familiar examples.

Although soft materials have been around for a long

time, only recently have scientists begun to explore their intricate dynamics, searching for a unified framework to explain and predict their complex behavior. In order to combine resources to further this endeavor, Dr. Feitosa has proposed and was awarded a mini-grant titled Bringing Together a Community of Soft Matter Researchers in Virginia.

This initiative will bring keynote speakers and researchers together for a Soft Matter Workshop event at James Madison University on February 11th, 2014. This workshop will facilitate statewide networking, communication and collaboration on the topic of soft matter research.



Principal Investigator:
Dr. Klebert Feitosa

“By better understanding our treasured aquatic resources, we can develop better conservation and management strategies.”

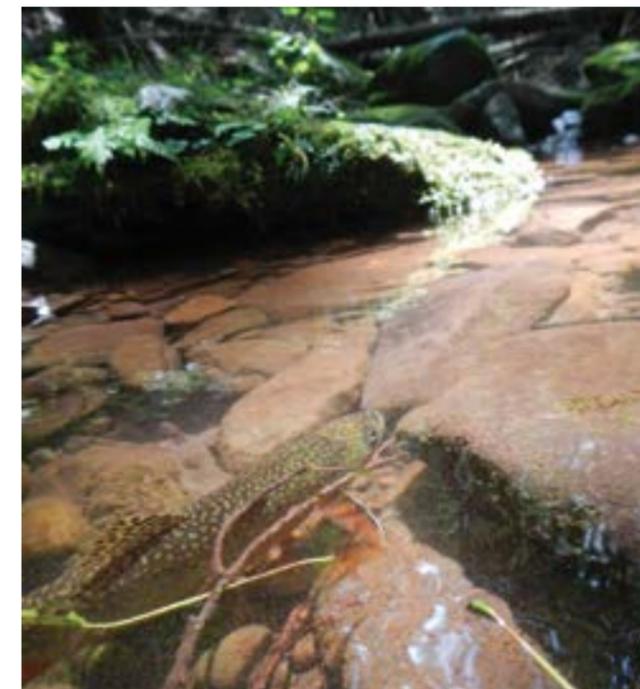
Researching the Shenandoah Valley: Coldwater Ecosystems

RIVER SYSTEMS support complex networks of life, including microscopic algae, animals, and of course, humans. Dr. Christine May, an assistant professor of biology at JMU, is no stranger to the significance of these systems. By forming collaborations with scientists, businesses, and government departments and agencies, Dr. May has been able to increase awareness for research and educational needs for rivers, streams, and springs in the Shenandoah Valley.

The city of Waynesboro, located 45 minutes south of Harrisonburg, is home to a section of the South River and is at the center of Dr. May’s grant. As the city strives to revive itself by increasing attractions that draw tourism to this gateway to the Shenandoah Valley and the Blue Ridge Parkway, Dr. May and her collaborators became involved in the effort to highlight unique attributes of the South River. The overarching goal of this endeavor is to increase interest in the development of the Center for Coldwaters Restoration, which will serve as a collaborative research center and educational facility for aquatic ecosystems.

“The mountain streams and large river valleys of Virginia are iconic ecosystems that provide critical habitat for native brook trout populations,” said Dr. May, “By better understanding our treasured aquatic resources, we can develop better conservation and management strategies.”

In September 2013, Dr. May and collaborators oversaw the Mountain Stream Symposium II: Continuing



Challenges for Critical Ecosystems, a one day symposium that was conducted to reach their goal—increasing awareness. The symposium was open to the public, and featured fourteen speakers from various Virginia universities and government agencies. Also featured were poster presentations and displays submitted by participants of the symposium, including several community-based programs.



Principal Investigator:
Dr. Christine May

Cross Country Adventures on an Electric Motorcycle



Principal Investigator:
Dr. Robert Prins

“ This experience taught me a lot about working on research with a team and adapting to situations along the way. ”

ON JUNE 6, 2013, former professional motorcycle racer Thad Wolff drove the electric motorcycle that broke the cross-country record. The journey totaled 2,500 miles and went from Jacksonville, Florida to Santa Monica, California. Even with a severe rainstorm and sweltering heat, it only took 84.5 hours, just over three days. The previous record was about six days.

But Mr. Wolff didn't do it alone. Dr. Robert Prins, a Professor in the Department of Engineering at JMU had partnered with Moto Electra, a Shenandoah Valley electric motorcycle company. Together they have been conducting research on the efficacy of electric mobility. The cross-country trip was a test based on their research.

A support team from JMU and Moto Electra rode along with Mr. Wolff in

a support van. Will Hays, a sophomore at JMU and part of the research team on the trip said “This experience taught me a lot about working on research with a team and adapting to situations along the way.” Hays was in charge of the data, tracking amps, GPS data, wind speed and direction, and temperature.



Thermal Conductance for the Next Generation



Principle Investigator:
Dr. Costel Constantin

PORTABLE ELECTRONIC DEVICES such as laptops, tablets, and cell phones are increasingly becoming an integral part of our daily lives, creating a demand for constant improvement. As devices improve in functionality, the changes in speed (bit rates) and size (making processors as small as possible) generate excess heat. This heat can be a health hazard and can damage the devices themselves. Improving a device's ability to keep up with these changes and dissipate heat is therefore crucial.

With the help of a 4-VA Mini Grant and a Scale-Up Grant, Dr. Costel Constantin, a Physics professor at JMU has partnered with Dr. Patrick Hopkins, a Mechanical and Aerospace Engineering professor at UVA. Together they will study the transfer of heat between materials in these devices.

When cooking on a stovetop, heat transfers from the stove through the bottom of the pan to the cooking surface of the pan, in order to heat and cook the food. Although the stovetop itself may be hot after a minute or two, it could take a while to heat the pan because of thermal conductance, or transfer of heat particles. As the heat particles

“ As devices improve in functionality, the changes in speed and size generate excess heat. ”

bounce back and forth within the first material—for example, the stovetop—only some of these particles are transferred to the second material—the pan.

When applied to microelectronics, such as cell phones, Dr. Constantin said, “It is increasingly important to study the Kapitza conductance of interfaces to fully understand and engineer the thermal transport in next generation nanodevices.” Kapitza conductance, also known as Kapitza resistance, is a measurement of thermal flow resistance.

Dr. Constantin and Dr. Hopkins' efforts have already been a success, receiving recognition from the Commonwealth Research Commercialization Fund as well as a \$100,000 grant to continue this research. In addition, funding from the 4-VA Scale-Up Grant has enabled three students to attend conferences and utilize labs and equipment at UVA, which would have been otherwise impossible.

Other 4-VA Research Grants

October 2012

Dr. Nathan Wright – Structure and Function Studies on Dispersin Homologues in Enterotoxigenic Bacteria

January 2013

Dr. Anne De Pianté Henriksen – Using the Mouse Four – Core Genotype Model and Estradiol to Elucidate the Effects of Gonadal Sex vs. Genes on RNA Sequences in the Cerebellum

Dr. Michele Estes and Dr. Stephanie Moore (UVA) – Reaching the Greatest Number of Learners: Improving Access to STEM Undergraduate Education Through Online Engineering Labs for Students Across Virginia

Dr. Roshna Wunderlich and Dr. Mark Gabriele – Design of Innovative Virtual Human Anatomy Modules to be Shared Across the Commonwealth

Dr. Susan Halsell – Seeding a Research Collaboration: Regulation of Dendritic Morphogenesis in the Genetic Model Organism, *Drosophila melanogaster*

Dr. Louise Temple – Finding and Analyzing Methicillin Resistance Genes in Viruses from Environmental Samples in the Shenandoah Valley: a Partnership between JMU and VCU

May 2013

Trudy Cole – Visual Literacy, Beyond Linguistic Communication

Dr. Anca Constantin – The WISE Search for Megamasers

Dr. LouAnn Lovin – Fraction Schemes and Operations: An Extension to Prospective PreK-8 Teachers

Dr. Robert Nagel – Distributable Stereo Hearing Test Kit

Dr. Teresa Harris – Effects of Preschool Attendance on Middle School Outcomes in Virginia

Alleyn Harned – Virginia Clean Fuels Student Partnership 2013-2014

Dr. James Wilson – JMU-ESRI Geoportal Collaborative

July 2013

Dr. Christopher Berndsen – Structure of human BST-2 with BST-2 antagonist Vpu

Dr. Carol A. Hurney – Exploring Tail Development from Three Ends

Dr. Patrice Ludwig – Scientific teaching workshop

Course Sharing

As members of 4-VA, the students and faculty of the four universities have the opportunity to share courses across institutions using telepresence classrooms. Therefore courses that aren't available at one university may be taken at another.

Benefits

COURSE SHARING reduces the costs of uneven student to faculty ratios, commuting, class cancellations and travel abroad. Prior to 4-VA's existence, for example, an advanced business Chinese course was only available to those JMU students who paid for a semester abroad. As another example, when a professor of Korean retired, JMU relied on 4-VA offerings to teach Korean rather than cancelling classes until a new professor was hired.



Moving Forward

OVER 125 STUDENTS have participated in shared courses with JMU since Spring 2012 and preparations are now underway to create opportunities for shared courses in physics and engineering between 4-VA institutions! New and existing technologies will be adapted so that students and faculty can effectively share projects and lab experiences.

For Example...

SHARED COURSES mean that students don't have to compromise their goals based on course availability. Consider the following beneficial situations that have occurred since 4-VA began sharing courses:

- A student in the Integrated Science and Technology Graduate program was able to enroll in a graduate level Community Ecology course being taught at George Mason University. This student had a very restrictive schedule including an assistantship, part-time job, and heavy course load. The ability to take this class gave her schedule more flexibility and allowed for her to stay on track with her predicted graduation date.
- Through the shared course program we were able to share a course in Population Ecology to students at UVA. In this situation, the Population Ecology course had previously been taught by a faculty member at UVA who then went on to retire. A faculty member here at James Madison University, Patrice Ludwig, was familiar with the UVA course and began developing a similar course to be shared in telepresence. We were able to share one section of this Population Ecology course to UVA and achieved maximum enrollment.

shared courses offered so far

Colored according to host university
JMU **GMU** **VT** **UVA**

*planned courses



Course Redesign

We all remember the worst class we ever took in college. Lectures didn't correspond to the book, activities were outdated, and there was no interactive learning. Students can only experience the value of higher education when classes are engaging, accessible, and inspiring. Through Course Redesign, 4-VA hopes to increase the value of classes with fresh and up-to-date information and platforms.

Through 4-VA, professors can make classes more accessible by redesigning them for online use, or by developing classes that can be shared with other 4-VA institutions. In addition, updating courses to integrate technology and new methods of teaching and learning can make classes more engaging.

Changing the Way We Teach: A Scientific Teaching Workshop

THESE DAYS science, technology, engineering and math (STEM) subjects are increasingly part of an integrated curriculum, transcending the limits of individual subjects and generating increased interest from students. Gone are the days of mundane lectures and PowerPoint slides—at least that is what Dr. Patrice Ludwig of JMU's Department of Biology is hoping.

In collaboration with two of her colleagues from the Department of Biology, Dr. Marta Bechtel and Dr. Kerry Cresawn, Dr. Ludwig is planning a one-day Introduction to Scientific Teaching workshop. Scheduled for Spring 2014, the workshop will provide faculty members with new teaching methods and activities that will, as stated in their course redesign proposal, "lead to improved student critical thinking and thus student success while at JMU and in the workforce."

The Spring 2014 workshop is part of a series that includes a workshop dedicated to JMU Biology faculty, to be held in Fall 2013, and a workshop for all 4-VA schools, to be held in the late Summer 2014.



Principal Investigators:
Dr. Marta Bechtel,
Dr. Kerry Cresawn,
and Dr. Patrice Ludwig

“Gone are the days of mundane lectures and PowerPoint slides...”

Virtual Human Anatomy



Principal Investigators:
Dr. Roshna Wunderlich and
Dr. Mark Gabriele

WITH OVER 1,000 seats available for JMU students to take a human anatomy course (BIO 290) each school year, it's no wonder that the professors are looking for innovative and creative ways to adapt the reputed JMU anatomy course model to the growing number of students taking the course.

Dr. Roshna Wunderlich and Dr. Mark Gabriele, both professors in the Department of Biology at JMU, are developing online modules for the course that will increase the amount of hands-on instruction time and

decrease the amount of time introducing the material. Students will have access to the modules before completing the lab, allowing them to become familiar with the content outside of the classroom, as well as access to the modules for reference after the lab is completed.

“Each picture or diagram we see in class corresponds to a module online,” explained Caitlin Biddle, a JMU student currently enrolled in BIO 290, “These images also appear on the tests, so this is great practice to see different parts of the body from all different angles and views.”

“...professors are looking for innovative and creative ways to adapt the reputed JMU anatomy course model to the growing number of students taking the course...”

Conferences

“Through 2 conferences, 4-VA established relationships among many different educators, focusing on Biology courses...”

AS ONE OF 4-VA's main initiatives, course redesign has impacted numerous university-level courses. However, 4-VA has reached beyond the university level, reaching out to the Virginia Department of Education, Virginia high school educators, and representatives from the Virginia Community College System to redesign courses for students as they move through different levels of education. Through 2 conferences, 4-VA established relationships among many different educators, focusing on Biology courses at the high school, community college, and 4-year institution levels.

The 4-VA Biology Conference took place in July 2012 and set the stage for discussing the problems surrounding students advancing through Biology courses at different levels of education. The Biology Articulation Conference followed this conference in May 2013 and brought together educators and administrators to discuss best practices for making these changes. Discussions at each conference ranged from AP Biology preparation courses to integrating updated technology into Biology courses. Because of these conferences, each 4-VA institution is now responsible for working on the articulation issues in their specified content area.

Bringing Robotics and Mechatronics into the Classroom



ROBOTS ARE the electronics of the future, an idea that has been around for decades. In Spring 2014, Dr. Kevin Giovanetti, a professor in the Department of Physics and Astronomy at JMU, is bringing this idea to life through a course in robotics and mechatronics. Not only is Dr. Giovanetti planning to teach his students about these topics—which combine computer engineering, mechanical engineering, and prototype

construction—but he is also incorporating them into the course design.

Partnering with Virginia Tech, Dr. Giovanetti will be sharing this course utilizing Kubi Revolve Robotics systems as well as Zoom, a video conferencing system.



Principal Investigator:
Dr. Kevin Giovanetti

College Wars: Simulating International Security Situations



Principal Investigator:
Dr. Bernard Kausler

“Students will be trained to apply various conflict resolution methods...”

THE 4-VA COURSE, “VA College Wars” provides students with an in-depth introduction to the field of international security by using a wide array of approaches to examine the nature and objective of security at state and international levels. The theoretical framework for the course examines various concepts of human, national and international security, various threats to security, and ways in which states have sought to address them both unilaterally and in multi-lateral organizations. Students will

be trained to apply various conflict resolution methods based on these concepts.

Since this course aims to provide both a theoretical understanding of security as well as exposure to a wide range of professional positions, students will be required to apply the security techniques and approaches in various simulations. Simulations may include maritime security, energy security, humanitarian intervention, and simulations of the wars in Afghanistan and Iraq.

Teaching Photography with Technology

DANIEL ROBINSON, Assistant Director of the Institute for Visual Studies at JMU, is currently redesigning a photography course that will be taught utilizing telepresence in Spring 2014. This course will help meet the goals of the Institute for Visual Studies by promoting discovery and research in terms of visual projects and innovation.

Principal Investigator:
Daniel Robinson



Technology Teaching Technology



Principal Investigator:
Dr. Chris Mayfield

DR. CHRIS MAYFIELD earned his first degree in Computer Science in 2005 at the University of Utah. Since then, he has interned at IBM and Google and is currently redesigning a computer science course for 4-VA. The availability of computer science education, one of Dr. Mayfield’s scholarly interests, will expand as a result of his course redesign, which is projected to be offered to students starting in spring 2014.

Technology and STEM Subjects

Changing how courses are taught requires changes to the environments in which they are taught. 4-VA at JMU is currently developing labs for hands-on learning, making them an ideal space for robotics and other physically engaging STEM courses. These labs will enable STEM courses—which lie at the heart of 4-VA’s initiatives—to facilitate the needs of students in those disciplines.

Robots in the Lab

WORKING WITH Virginia Tech, an institution known for its engineering programs, required a few changes for Dr. Kevin Giovanetti. Sharing a robotics course with Virginia Tech meant developing a new lab where students and faculty could interact seamlessly regardless of location. Dr. Giovanetti had been teaching robotics courses to JMU students, but their lab needed updating with Telepresence equipment that would allow professors at Virginia Tech the ability to see student work in action.

By implementing Telepresence calling systems and Kubi Revolve Robotics systems, which are mounts that can pan and tilt iPads, students and professors can share computer screens and pan to different parts of the room. The lab is projected to be completed in time for the start of the Spring 2014 semester.

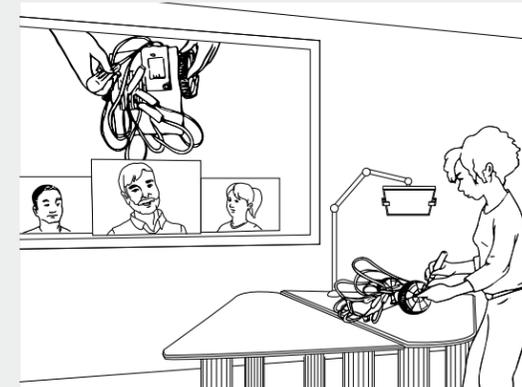
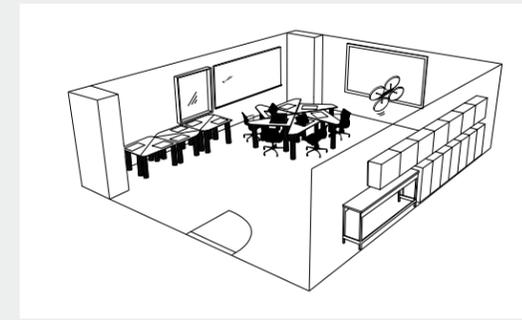
Kubi, a new company based in San Francisco, California, is working with 4-VA at JMU to develop computer interfaces that will continue to better suit student and faculty needs.



Dr. Kevin Giovanetti

“Sharing a robotics course with Virginia Tech meant developing a new lab where students and faculty could interact seamlessly regardless of location.”

Planning Telepresence illustrations by Katie Thomas



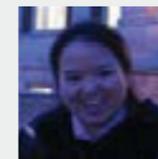
Faculty Members



Dr. Michelle Estes



Dr. Christie Liu



Dr. Shenghua Zha

Sharing STEM Courses through Telepresence

TELEPRESENCE CLASSES have broken the boundaries of space and time, making classes available in situations where they would have otherwise been impossible. The primary limitation in Telepresence classrooms today is that students and instructors can’t interact directly with each other. In situations where an instructor would normally look over a student’s shoulder to see what she is struggling with, students must instead verbally articulate their questions over a remote system. This can take up valuable time and generate frustration, es-

pecially for hands-on classes.

The Telepresence lab planned for the Health and Human Services building at JMU has been designed to break this boundary, too. With use of the Suitable Technologies Beam and other Telepresence systems, students will feel like their professor is in the classroom with them. Beam is a remotely controlled robot on wheels with a screen displaying the controller. With the ability to move around the classroom and individually or collectively guide students, instructors *can* look over a student’s shoulder!

Bridging the Gap Between Technology and Education

THE SUCCESS of 4-VA’s course redesign and course sharing endeavors required looking at more than just how to make classes available online and instructing faculty on how to use the Telepresence equipment. A lot more went on behind the scenes to establish highly effective learning environments.

Dr. Michele Estes, Dr. Juhong “Christie” Liu and Dr. Shenghua Zha spent time researching requirements for STEM learning environments at JMU and did a case study

on the technologies and techniques that could support course collaborations among 4-VA institutions. Their research led to a STEM Faculty Technology Fun Day that allowed faculty members to test and evaluate prospective methods and technologies, such as the Suitable Technologies Beam and Double Robotics mobile telepresence systems. As a result of their research and evaluation of these technologies, these systems and new software applications will be utilized in the Robotics lab for course sharing with Virginia Tech.

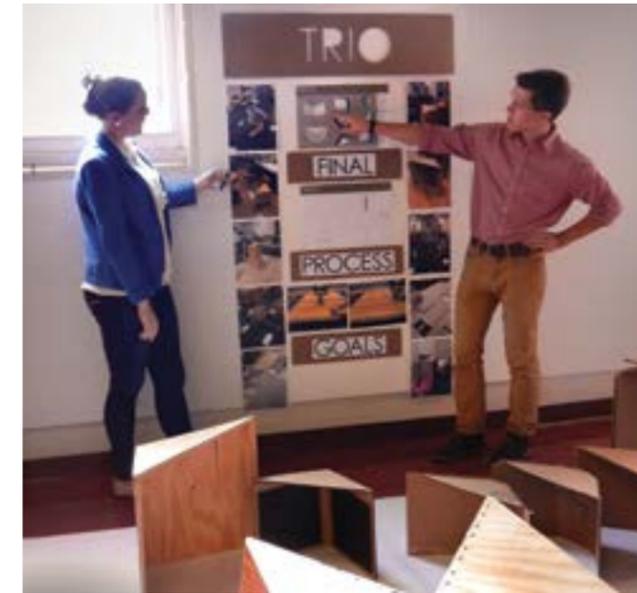
Innovation, Collaboration, Entrepreneurship

JMU and the Harrisonburg community are finding ways to work together. By remodeling the old Cassco Ice House in Downtown Harrisonburg, the two communities are combining resources to develop a collaboration center for entrepreneurs. The ICE House project has also provided real-world experience to JMU Industrial Design students.

“The ICE House will be advertised as an entrepreneurial prototyping lab, where JMU students and faculty can work together with Harrisonburg residents, potentially developing new businesses and products.”

AS AN INTEGRAL part of the Harrisonburg community, JMU continues to enrich and preserve aspects of the area's history. Most recently, JMU has partnered with the City of Harrisonburg to renovate the historic Cassco Ice House Complex. Built in 1934, the Ice House was a landmark in Harrisonburg's downtown, but as the city grew, the building was forgotten. With a \$500,000 grant from the Virginia Department of Housing and Community Development to the city, 4-VA at JMU will help develop a new space, turning the original name into an acronym to reflect its updated veneer: Innovation, Collaboration and Entrepreneurship (ICE).

As part of the project Audrey Barnes, an Assistant Professor of Industrial Design at JMU, is having her Industrial Design (INDU) 492 students design furni-



ture for the space. With 16 upperclassmen enrolled in the course, Professor Barnes has split them into teams of four to develop full-scale furniture prototypes. The students will then present their prototypes to those involved with the ICE House project to determine which design will be mass-produced for the space. The opportunity 4-VA has given her to apply classroom topics to real-world situations, Professor Barnes said, has “encouraged new ways of thinking about education and collaboration.”

The students will then present their prototypes to those involved with the ICE House project to determine which design will be mass-produced for the space.



...Audrey Barnes, an Assistant Professor of Industrial Design at JMU, is having her Industrial Design (INDU) 492 students design furniture for the space.

The ICE House will be advertised as an entrepreneurial prototyping lab, where JMU students and faculty can work together with Harrisonburg residents, potentially developing new businesses and products. In this sense, not only is 4-VA encouraging collaboration and innovation among the four schools, but also between communities and disciplines.



For some students, life doesn't accommodate finishing a degree...

STARTING A FAMILY, moving, a changing economy, family illness, lack of transportation or childcare, and other circumstances can make it difficult for an adult to complete his or her college education. One of 4-VA's goals is to make it easier for adults who have earned their associate's degree at one of Virginia's community colleges to earn a bachelor's degree from one of the 4-VA institutions. As a result of 4-VA's financial support, JMU has improved access to educational opportunities for non-traditional students through expanded online course offerings.

“JMU's new RN-BSN program ... is now available fully online, as of Fall 2013.”

The 4-VA program has made it possible for JMU faculty to redesign face-to-face classes into dynamic, interactive online classes for the Adult Degree Program. In just its first year, 4-VA has supported the redesign transition for 23 unique courses concentrated in 6 distinct modules. These modules can be combined to meet the relevant needs of each student; ultimately designing a specific program of study that satisfies the core requirements of the Individualized Study major. Modules developed this year are: business technology, entrepreneurship, public policy and administration, and sustainability.

In addition, funding from 4-VA has supported online course development for JMU's new RN-BSN program which is now available fully online, as of Fall 2013. The RN to BSN program provides flexible, online learning opportunities for students who are graduates of community college or diploma nursing schools and are licensed registered nurses. Classes are offered online to allow students to maintain employment while completing the BSN degree. Full-time or part-time enrollment options are

Current Areas of Study

Business Technology

Entrepreneurship

Sustainability

RN to BSN

Future Areas of Study

Natural Sciences

Humanities

Written Communication

available. The online program provides a supportive environment for students within a community of learning, and offers a foundation for professional practice. Offering this program fully online allows nurses across Virginia to attain their bachelor's degree in nursing, which is quickly becoming the standard across all healthcare settings.

“Classes are offered online to allow students to maintain employment while completing [their] degree.”

In just the first year the total individual course enrollments has reached 141 students. A computer science/programming module is in development, as are classes that will fulfill general education requirements in natural science, humanities, and written communication for students needing those core liberal arts courses.

4-VA Staff at JMU

Name	Title	Email
Nick Swayne	Campus Coordinator	swaynedd@jmu.edu
Kai Brokamp	Deputy Campus Coordinator/STEM Coordinator	brokamkm@jmu.edu
Steve Able	Graduate Assistant	ablesd@dukes.jmu.edu
Andrea Costello	Undergraduate Assistant	costelal@dukes.jmu.edu

JMU Steering Committee

Name	Title
Sarah Cheverton	Director, Center For Instructional Technology
Dale Hulvey	AVP for Information Technology
Carol Hurney	Executive Director, Center For Faculty Innovation
John Knight	AVP for Finance
Jim Schaeffer	AVP for Outreach and Engagement

JMU Contributing Members

Name	Title
David Lamm	Network Services Manager
Jim West	Assistant Director, Classroom Technology Services

Corporate and State Partners

Name	Title
Peter Blake	Director, State Council of Higher Education for Virginia
Laura Fornash	Virginia Secretary of Education
Carol Stillman	Business Development Manager - Higher Education at Cisco

Featured Faculty

Name	Page	Email
Audrey Barnes	19	barnesal@jmu.edu
Dr. Marta Bechtel	13	bechtemk@jmu.edu
Dr. Kerry Cresawn	13	constacx@jmu.edu
Dr. Costel Constantin	10	cresawko@jmu.edu
Dr. Michele Estes	18	estesmd@jmu.edu
Dr. Klebert Feitosa	7	feitoskb@jmu.edu
Dr. Mark Gabriele	14	gabrielm@jmu.edu
Dr. Kevin Giovanetti	15, 17	giovankl@jmu.edu
Dr. Bernard Kausler	16	kauslrbx@jmu.edu
Dr. Christie Liu	18	liujc@jmu.edu
Dr. Patrice Ludwig	13	ludwigpm@jmu.edu
Dr. Christine May	8	maycl@jmu.edu
Dr. Chris Mayfield	16	mayfiecs@jmu.edu
Dr. Bob McKown	6	mckownrl@jmu.edu
Dr. Robert Prins	9	prinsrj@jmu.edu
Daniel Robinson	15	robinsdl@jmu.edu
Dr. Louise Temple	5	templelm@jmu.edu
Dr. Roshna Wunderlich	14	wunderre@jmu.edu
Dr. Shenghua Zha	18	zhasx@jmu.edu

4-VA Working Group

Name	Title	University	Email
Amy Brener	Deputy Director, 4-VA	GMU	abrener@gmu.edu
Kelsey Brunton	4-VA Assessment Coordinator	VT	church87@exchange.vt.edu
David Kniola	Assistant Director, Office of Assessment and Evaluation	VT	dkniola@vt.edu
Michael McPherson	Campus Coordinator	UVA	mrm6k@virginia.edu
Anne Moore	Campus Coordinator	VT	ahmoore@vt.edu
Janette Muir	Campus Coordinator	GMU	jmuir@gmu.edu
Sharon Pitt	Executive Director, 4-VA	GMU	spitt@gmu.edu
Linda Sheridan	Shared Course Coordinator	GMU	lsherd2@gmu.edu
Jennifer Sparrow	Deputy Campus Coordinator	VT	jennifers@vt.edu



<http://www.jmu.edu/4-va/>



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Project Manager and Content Writer
Andrea Costello

Content Writer and Editor
K. A. Reedy

Artistic Director and Graphic Designer
Rosalind O'Brien

Photography Editing
www.rammelkampfoto.com