

Southern Utah University
Walter Maxwell Gibson College of

Science & Engineering

2017-2018 Year in Review



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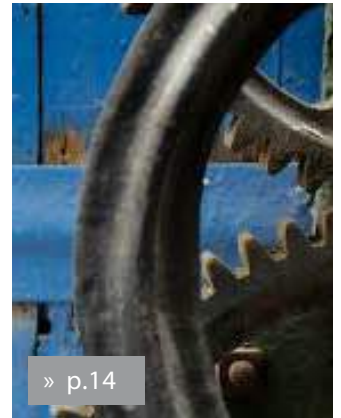
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NSA DESIGNATION FOR SUU CYBER EDUCATION

SUU NAMED A NATIONAL CENTER OF ACADEMIC EXCELLENCE



The National Security Agency (NSA) and the Department of Homeland Security (DHS) have designated Southern Utah University as a National Center of Academic Excellence in Cyber Defense Education (CAE-CDE). SUU is the only public university in Utah to receive this designation.

"This designation truly represents a rigorous national standard for our high-quality cybersecurity degree programs on campus," said Dr. Dezhi Wu, Director of the Cyber Security and Information Assurance Graduate Program

and professor of information systems. "It promotes excellence in our academic programs, new research and funding opportunities in cyber defense for our faculty and students, new collaboration opportunities with other universities and industry partners, and outreach opportunities to the community. It also certifies us to produce professionals with cyber defense expertise for the nation."

According to the notification from the NSA and DHS, "[SUU's] ability to meet the increasing demands of the program criteria will serve

“ [SUU's] ability to meet the increasing demands of the program criteria will serve the nation well in contributing to the protection of the National Information Infrastructure.”

the nation well in contributing to the protection of the National Information Infrastructure... Like all nations, the United States has a compelling interest in defending its vital national assets, as well as our core principles and values, and we are committed to defending against those who would attempt to impede our ability to do so. Education is the key to promoting these ideals."

SUU has become a national leader in cyber security education in recent years. The university offers strong undergraduate programs in computer science and

information systems, with options to specialize in cyber security. SUU also has a Masters of Science in Cyber Security & Information Assurance program which focuses on the design and management of systems tasked with defending networks from external threats, such as terrorism.

"We see a lot of news about cyber security and a growing gap in the workforce, meaning there are a lot more jobs out there than we have qualified individuals to fill," said Dr. Rob Robertson, Computer Science and Information Systems Department Chair.

"This designation puts us into a National Community that is dedicated to improving the cybersecurity skills of professionals entering the industry. It is a great community to belong to, and will open many doors for the University and our students."

National Center of Academic Excellence in Cyber Defense Education certificates were presented during a designation ceremony at the National Cyber Summit June 5-7, 2018, in Huntsville, Alabama.

8 Reasons to Major in Computer Science & Information Systems

CSIS is an **ABET accredited program**, educating students in up-to-date professional standards.

Professors teach in **specialized labs**, including state-of-the-art Linux, networking and forensics computer labs, providing hands-on, industry specific experience.

Students have the opportunity to work in SUU's **Security Operations Center (SOC)**, gaining experience using tools and techniques common to network traffic analysis.

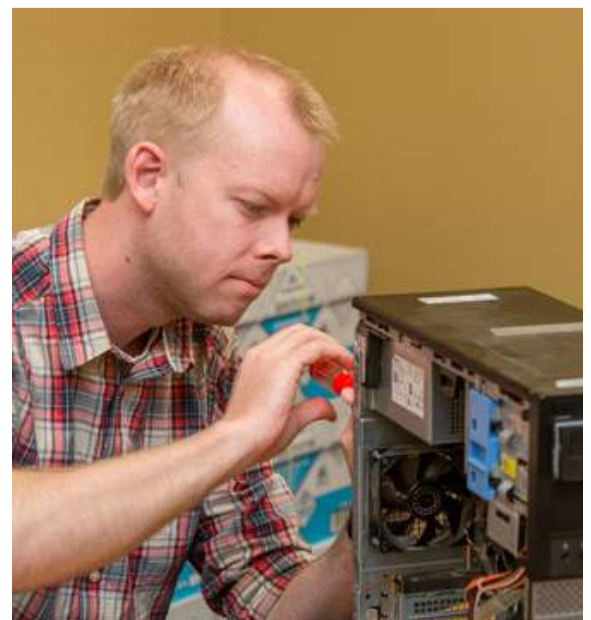
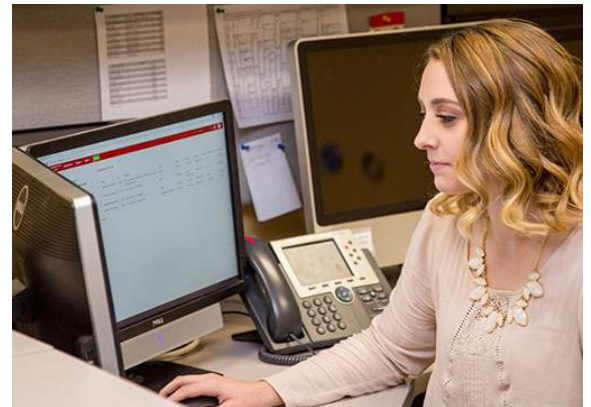
SUU IT Help Desk hires CSIS majors, providing **relevant on-campus employment**.

SUU's **small class sizes** are exemplified in CSIS. Students have full access to their professors for extracurricular research, additional help in class or professional development advice.

CSIS emphasizes **project-based curriculum**.

Undergraduate students can easily **transition to graduate school** via the Master of Cyber Security & Information Assurance program.

CSIS can lead students to many careers, and there is a **high demand for graduates** in CSIS-related fields.



MAKING HEADLINES

WMG COSE STUDENTS IN THE NEWS



Valedictorian & Researcher

WMG COSE Valedictorian Jacob Lambertson hopes to practice medicine in a rural, underserved community upon graduating from medical school. During his time at SUU, Lambertsen has assisted with the complex research of trying to determine the redox potential of a cell.

“This research has implications in cancer treatment for if it is determined that cancer cells have significantly different redox potentials relative to healthy cells, inactive drugs can be administered to the body and only be activated upon entering the unique redox environment of cancer cells,” said Lambertson.

While getting accepted to several prestigious medical schools, Boonshoft School of Medicine at Wright State University in Dayton, Ohio is where Lambertson has chosen continue his academic journey, starting Fall 2018.



Personalizing Alexa

An understanding of technology can open many doors. Katrina Mehring’s proficiency with technology opened a big door for her, as the computer science major from Pioche, Nevada, was able to secure an internship at Amazon in summer 2017.

At Amazon she helped the Alexa Skills Publishing team create a system that would allow developers to tailor Alexa’s skills to specific users. These skills are applications used by Alexa, a cloud based digital assistant, that allow customers to do anything from checking the news and weather to scheduling appointments or receiving style tips.

“I was able to learn and implement AWS technologies, notably DynamoDB, SQS and SNS services,” said Mehring. “I also learned the importance of operational focus and software testing as part of my internship.”

MEDICAL SCHOOLS: WE ACCEPT!

■ SUU ACHIEVES 94% MED SCHOOL ACCEPTANCE RATE IN 2017 ■

The Walter Maxwell Gibson College of Science & Engineering (WMG COSE) has held their reputation for high graduate school acceptance rates for many years. In 2017, however, the college set a new record with 94% of its pre-med graduates entering medical programs. With the national average medical school acceptance rate at approximately

40%, SUU's rates attest to the quality of programs offered through WMG COSE.

The 2017 graduates were accepted into schools across the United States, including Geisel School of Medicine at Dartmouth, LECOM School of Dental Medicine, Roseman University of Health Sciences College of Dental

Medicine and Western College of Osteopathic Medicine in the Pacific Northwest. The largest percentage of students were accepted to two prominent schools: University of Utah and Rocky Vista College of Osteopathic Medicine.



University of Utah

August 21, 2017 was the memorable day of the solar eclipse for all Americans, yet this was an extra special event for those past SUU students who received their medical white coat at the University of Utah School of Medicine (UUSOM), signifying the start of their journey to become physicians.

Weston Smith of Midvale, Utah, Ty Anderson of St. George, Utah, Alexandra Montoya of Herriman, Utah, Alyssa Brown of Magna, Utah and Spencer Lindsay of Cedar City, Utah are all proud members of this year's UUSOM class of 2021. During medical school, each student will complete didactic curriculum, clinical rotations, and a full residency in their area of specialty.

The White Coat Ceremony, held on the U of U campus in Salt Lake City, serves as a representation of the high ethical standards that each medical student agrees to, including reciting the Hippocratic Oath. Friends and family were present for the ceremony, including Karen Ganss, Assistant Director and Pre-Health Advisor for these students in Rural Health Scholars at SUU.

"I can't express how proud I am of each of these students in their hard work while at SUU and strong dedication to a future in health care. They serve as great representatives of SUU, Cedar City, and all of rural southern Utah," Ganss stated in reflecting on her experiences with these students.

The School of Medicine at the U of U is highly competitive, with a class size of only 125 students. When compared to the approximately 4,000 applications they received for fall 2017, it is quite an accomplishment to be accepted. This program combines excellence in teaching, research, and clinical expertise to successfully train tomorrow's physicians for the rapidly changing world of medicine. More details can be found online at <http://medicine.utah.edu/>.

Rocky Vista College of Osteopathic Medicine

On July 21, 2017, six students celebrated the start of their journey to becoming physicians at the Rocky Vista College of Osteopathic Medicine Colorado (RVUCOM-CO) campus. These included Brandon Bealer and EJ Leavitt of Cedar City, Utah, Colby Presley of Blythe, California, Jaron Matsunaka of Hilo, Hawaii, Levi Myers of St. George, Utah and Trystan Blake of Herriman, Utah.

The RVUCOM-CO campus was founded in 2006 and currently hosts programs in osteopathic medicine, biomedical sciences, and physician assistant studies.

The new Southern Utah campus garnered the most SUU students, making them RVUCOM-SU's fourth undergraduate feeder school, with nine students enrolled in their inaugural class. Proud members include Jake Allinson of Goshen, Utah; Joanna Durfee, Chris Sauceda, and Taylor Serrine of Cedar City, Utah; Colson Healy of Provo, Utah; Haley Shumway of Lehi, Utah;



The Success Continues

As of July 2018, 91% of SUU Walter Maxwell Gibson College of Science & Engineering pre-med graduates had been accepted into medical school. Final acceptance rates will be available in late August 2018.

Paydon Newman of St. George, Utah; Cody Patterson of Santa Clara, Utah and Jared Wilson of Richfield, Utah.

The Southern Utah White Coat Ceremony was held at the Tuacahn Center for the Arts in Ivins, Utah on September 16, 2017. Keynote speaker Dr. Thomas Told explained how his vision for a

medical school in Southern Utah has been a dream of his since he was a pre-medical student himself, seeking to become a rural family practice physician. Dr. Told reported, "As a young boy, I promised myself I'd become a country doctor and return one day to help the small towns of Utah find and keep their doctors since so many students must leave the state to become physicians."

To emphasize RVUCOM's dedication to rural medicine, Dr. Told had the class of 2021 stand up, and sit down based on various 'rural prompts' related to their upbringing. The four students who remained standing at the end were from very small communities. Dr. Told tasked those students with sharing their passion for rural areas with their classmates over their next few years. This commitment to serving rural and underserved populations is evident in RVUCOM's mission and choice of Ivins as a campus location.

During medical school, each student will complete didactic curriculum, clinical rotations, and a full residency in their area of specialty. The RVUCOM incoming classes consist of 135 students per campus; 55% of the Ivins students are from Utah. Classes are shared between the two campuses electronically, so faculty and curriculum are identical. RVUCOM boasts many accolades as an osteopathic medical school, including being ranked as the top innovator in medicine for 2014 by 5280 Magazine, ranked as one of the ten least expensive schools by US News & World Report, and designated as a Military Friendly School. More details can be found online at <http://www.rvu.edu/>.

6 Reasons to Study Pre-Med at SUU

SUU offers support and guidance to ensure students interested in medical careers are well positioned for acceptance into medical school. SUU students majoring in biology, chemistry and human nutrition have gained admission to top medical schools by completing the required pre-med pre-requisites while pursuing their undergraduate degree. Walter Maxwell Gibson College of Science and Engineering (WMG COSE) academic advisors and pre-med faculty advisors work closely with students to chart the ideal academic program for their success.

Students graduating from WMG COSE enjoy high placement rates in medical schools, averaging approximately 90% over the last 10 years. Students can enroll in the Utah Rural Health Scholars Program on campus, providing resume-building activities to ensure competitive graduates in the medical school admissions process.

Here are six reasons why students should consider SUU's pre-med program.

By working closely with professors and advisors, students can **focus their education** on specific medical interests like dental, physical therapy or medicine. Introductory biology, chemistry, and anatomy classes also help students choose an area of expertise.

SUU's **Rural Health Scholars** program offers job shadowing, service learning and leadership training to pre-med students. RHS ensures students are prepared and competitive in the medical school admission process. The program also offers medical trips locally, nationally and internationally to expose future doctors to rural health conditions.

Alpha Epsilon Delta is the **National Health Preprofessional Honor Society** dedicated to the encouragement and recognition of excellence in pre-professional health scholarship.

SUU's **nationally-recognized pre-med faculty** have connections across the country to help students arrange summer internships and acceptance into graduate schools. Courses like Organic Chemistry and Human Physiology attract students from around the nation for the high-quality, rigorous curriculum.

SUU has an **18:1 student to faculty ratio**, which the pre-med courses exemplify. Students have full access to their professors for extracurricular research, additional help in class or professional development advice.

Through WMG COSE **experiential learning** opportunities. Pre-med students have hands-on labs each semester, training them on biological and chemical concepts. SUU professors also include students in their extracurricular research, coaching them from the beginning research stages to the final submission to an academic journal.

FOR THE CHILDREN

WMG COSE HELPS LOCAL AND INTERNATIONAL YOUTH



Dominican Republic

SUU's Rural Health Scholars program traveled to the Dominican Republic to provide medical assistance in Fall 2017. The students worked with the non-profit organization Solid Rock International and students from Snow College, USU Eastern-Price, and the University of Utah. The group helped Dominican Republic nurses gather medications, take blood pressure, and pass out toys to children. They also worked to improve the existing hospital in San Juan de la Maguana and shadowed a Dominican Republic pastor as they went door-to-door visiting children and their families in the surrounding barrios.



STEAM Fest

The third annual STEAM Fest was held in October at SUU. The two-day festival presented hands-on science, technology, engineering, art and math learning for children of all ages. With over 3,000 students in attendance, the STEAM Festival brought southern Utah K-8th students together for a day of experiential learning and interdisciplinary projects to help make STEAM education exciting for students of all ages. Hosted by the SUU Center for STEM Teaching & Learning and the Walter Maxwell Gibson College of Science & Engineering, the STEAM Fest has continued to successfully build a program comparable to those held along the Wasatch Front.



Robotics in Southern Utah













SUU continued to offer exciting opportunities for kids to explore science, technology, engineering and math through FIRST Robotics Programs. In January 2018, SUU faculty and students oversaw a regional tournament involving almost 500 K-12 students. Six of these teams were coached by associate professor of information systems Dezhi Wu and her students. They taught team members an appreciation for STEM concepts as they designed, built and programmed a Lego Mindstorms robot. Students also researched and developed innovative solutions to current problems confronting scientists and society while practicing the FIRST core values of teamwork and professionalism.

WHERE ARE THEY NOW?

GRADUATE SCHOOLS FOR 2017 SUU WMG COSE GRADUATES

- | | | |
|---|--|--|
|  Boston University |  North Dakota State University |  University of Minnesota |
|  Brigham Young University |  Pennsylvania State University |  University of Utah College of Pharmacy |
|  Colorado State University |  Portland State University |  University of Utah Medical School |
|  Columbia University |  Rensselaer Polytechnic Institute |  University of Wyoming |
|  Geisel School of Medicine at Dartmouth |  Rocky Vista College of Osteopathic Medicine - Colorado |  University of Pittsburg |
|  Georgia Institute of Technology |  Rocky Vista College of Osteopathic Medicine - Southern Utah |  Utah State University |
|  Idaho Sate University |  Roseman University of Health Sciences College of Dental Medicine |  Virginia Commonwealth University |
|  Kent State |  University of Arizona |  Washington State University |
|  LECOM School of Dental Medicine | |  Western College of Osteopathic Medicine in the Pacific Northwest |
|  Midwestern University | | |

EMPLOYERS FOR 2017 SUU WMG COSE GRADUATES

- | | | |
|---|---|---|
|  Alpha Engineering |  Engineering Consultants |  Ben Hulet Construction |
|  Amazon |  ARUP Laboratores |  Bureau of Land Management |
|  America Buildings Company |  Banner Health |  Casino Game Maker |
|  Applied Geotechnical |  Bella Terra |  CBI Offroad Fab |

🎓 Cedar City Hospital	🎓 Iron County School District	🎓 State of Utah Division of Wildlife
🎓 Cedar Dermatology	🎓 Kim Evans	🎓 Steel Construction Company
🎓 Cedar High School	🎓 Lake Powell Resorts and Marinas	🎓 Stonehenge
🎓 Century Link	🎓 LDS Hospital	🎓 Summitt Engineering Group
🎓 Clark County School District	🎓 Lochner	🎓 Sunrise Engineering, Inc
🎓 Construction Monitor	🎓 Materion Natural Resources	🎓 SyberJet Aircraft
🎓 Czranowski	🎓 Mercy Gilbert Medical Center	🎓 The Church of Jesus Christ of Latter Day Saintes
🎓 DaVita Kidney Care	🎓 Mercy Healthcare	🎓 The Lawn Guys
🎓 Design West Architects	🎓 Myriad Genetics	🎓 Timpanogas Regional Hospital
🎓 Dixie National Forest	🎓 Nelson Laboratories, LLC	🎓 Tracy Avaiary
🎓 Dixie Oral Maxillofocal and Implant Surgery	🎓 Nelson Labs	🎓 Troseth Contruccion
🎓 Dixie Regional Medical Center	🎓 Overson's Farm Center	🎓 Turn Community Services
🎓 Draper City Parks Department	🎓 Parkland Hospital	🎓 US Forest Service
🎓 Eastern Province Governor	🎓 Primary Children's Medical Center	🎓 US Department of Agriculture
🎓 Ellucian	🎓 Rocky Mountain Care	🎓 Wamart Logistics
🎓 General Atomics	🎓 Saint George Rehadbilitation	🎓 Wexner Medical Center
🎓 Gibson Grass	🎓 Saint Thomas Health	🎓 Wheeler Farm
🎓 Glenwood Golf and Spa	🎓 Saudi Telecom Company	🎓 Zwick Construction
🎓 Go Green Enterprises	🎓 Self Employed	
🎓 Good Samaritan Hospital	🎓 Servpro	
🎓 Hill Air Force Base Materials Lab	🎓 Seth Lovell	
🎓 Intermountain Farmers Association	🎓 Sky Ridge Medical Center	
🎓 Intermountain Health Care	🎓 South Central Commincations	
🎓 IM Flash Technology	🎓 Southern Utah Mortuary	
🎓 Intermountain Medical Center	🎓 Southern Utah University	



GROWING BY DEGREES

TRUSTEES APPROVE NEW MECHANICAL ENGINEERING DEGREE

The Southern Utah University Board of Trustees has approved an expansion of the SUU engineering program with the addition of a bachelor of science in mechanical engineering. Current students have started transitioning to the new degree and the first mechanical engineering graduates may graduate as early as Fall 2018. New students can enroll for the program starting Fall 2018.

The new program allows students to further specialize their education, preparing them for a highly-favorable job market. SUU's job placement rate for engineering graduates continues to increase as students receive a degree tailored to mechanical engineering.

"This is a great day for engineering at SUU," said Dr. Robert L. Eves, Dean of the Walter Maxwell Gibson College of Science & Engineering. "We are so excited about this new opportunity for our students, the interest it will create in SUU engineering, and the supply of well prepared and competent engineers that this program will produce. Mechanical engineering is in high demand nationally and we are excited to supply our graduates to the

growing demand of potential employers."

Students now have the option to pursue the bachelor of science in engineering (a broad-based engineering degree) or major in mechanical engineering. Dr. Scott Munro, Associate Chair of the Engineering & Technology Department, recognizes the need for mechanical engineers nationally and knows prepared SUU students will meet the demand.

"Mechanical engineering is a broad discipline in high demand, so our graduates will be able to engage in engineering careers locally, across the state, and all over the country," said Munro. "Expanding the engineering program will also help persuade

companies considering southern Utah as a location. They will have a talent pool of qualified engineers to fill positions locally, as well as being able to leverage the technical expertise of SUU, potentially creating partnerships that enhance the student experience and benefit the company and the community."

SUU's ABET-accredited engineering bachelor's degree program produces over a dozen graduates each year. Class sizes are small, allowing each student direct access to their highly-qualified instructors. Professors become dynamic advisors, helping to ensure the understanding of key concepts and navigating through graduate school and career decisions.

Why Choose SUU for Engineering Studies?

Engineering classes are small at Southern Utah University and students learn in labs that are modern and feature the latest technology. Lower division Engineering courses typically include no more than 25-30 students. Upper division classes usually have no more than 15 students each. This gives students extraordinary access to their instructors who become excellent advisors and work side by side with students helping ensure they thoroughly understand key Engineering concepts.

PARTNERS IN THE FIGHT

NEW DIGITAL CANCER DIAGNOSTICS PARTNERSHIP



SUU partnered with LUMEA Inc, a medical diagnostic research organization in Spring 2018, with the aim to accelerate the development of new digital cancer diagnostics in the field of pathology.

“SUU is an ideal environment for multi-partner research collaboration,” said Robert Eves, Dean of the Walter Maxwell Gibson College of Science and Engineering at SUU. “The university is interested in providing quality experiences for faculty and students and welcomes research opportunities of this caliber.”

LUMEA developed and deployed the first artificial-intelligence cancer diagnostic platform in urology. The Digital Diagnostic Medical Research Initiative (DDx-MRI) will enhance the application of this technology in other types of cancer. This research initiative brings internationally recognized medical experts to campus for research sabbaticals and direct collaboration with SUU faculty and students.

The first DDx-MRI visiting professor is Dr. Sorin Musat, PhD/MD. An anatomical pathologist from

Romania, Musat developed techniques and tools to advance the science of histotechnology, a foundational part of cancer diagnostics. This initiative provides exceptional hands-on medical research opportunities for students interested in the medical field, histology and engineering fields. SUU students can apply for scholarships or college credit as they engage with the visiting faculty.

Dr. Matthew O. Leavitt, SUU class of '98 and LUMEA founder and Chief Medical Officer, is enthusiastic about the opportunities this partnership will provide for SUU.

“Students will be able to get involved in medical research early in their education,” said Leavitt. “They will have the opportunity to form relationships and mentorships with academic physicians from nationally recognized medical schools.”

Housing and travel expenses for visiting faculty are made possible through donations from the Dixie and Anne Leavitt Family Foundation. SUU is providing research space and a venue for visiting faculty summer seminars.

“

We have a
program
[that]...

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more importantly,
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to go into practice
or into graduate
programs with
the knowledge,
skills and attitudes
to excel in their
profession and their
personal lives as
they work and live
in communities
across the nation.”



NURSING RANKED #3

■ SUU NURSING PROGRAM THIRD IN STATE ■

RegisteredNursing.org, a nursing advocacy organization, accessed RN programs throughout the state in order to select the best nursing schools in Utah. SUU was ranked third, behind Western Governors University and Brigham Young University.

The ranking highlighted that SUU's nursing graduates are taught with an emphasis on communication, critical thinking, and problem solving. Ethics and high quality patient care are also integral elements of the program.

"We have a program with qualified, experienced faculty members who love to teach and intelligent, motivated, and impressive students," said Donna Lister, Chair of the Department of Nursing. "This combination has produced results that have ranked us in the top nationally, and more importantly, prepared students to go into practice or into graduate programs with the knowledge, skills, and attitudes to excel in their profession and their personal lives as

they work and live in communities across the nation."

Nursing programs were assessed on several factors which represent how well a program prepares students toward licensure and beyond. RegisteredNursing.org analyzed the past and present first time NCLEX-RN pass-rates for the 18 RN programs in the state that offer Associate in Nursing (ADN/ASN), BSN, or Direct-Entry MSN Degrees.

The nursing program at Southern Utah University is accredited by the Commission on Collegiate Nursing Education. It has enabled its students to take calculated action, even in high-pressure situations. Their well-rounded perspective allows them to think on their feet and care deeply for their patients.

SUU's nursing program includes tracks for pre-licensure and RN to BSN students.

Meeting the Needs of Southern Utah RNs

To facilitate the needs of registered nurses throughout southern Utah, SUU's RN to BSN program adopted a blended, teaching/learning approach in May 2018. Classes are now held on-line throughout the week and on the SUU campus every Monday.

FROM HOMELESS TO TOP RESEARCHER

FORMER HOMELESS VET GRADUATES WITH EYE ON MED SCHOOL

From living on the streets of Los Angeles to graduating top of his class, Donald Long, a first-generation student, says SUU gave him a second chance.

After graduating from high school in New Jersey in 2000, Long joined the Air Force. There, he learned the value of hard work and loyalty. Stationed in Kansas, he discovered a love for personal training and fitness. He worked at

a local gym in Kansas until 2009, when Long decided to follow his dreams of personal training in California.

Long lived in what he referred to as a 'scary, bad neighborhood' in California. He worked as a personal trainer at a local gym and felt good about his decision to leave Kansas. Then Long became involved in a neighborhood fight. Long was stabbed inches away

from his spine and hospitalized, lucky to be alive.

After his hospital release, Long didn't want to return to that neighborhood and became homeless on the streets of Los Angeles. He bounced around multiple VA shelters, trying to keep his job and survive.

"It got to the point I was sleeping literally on the street," said Long. "It was the lowest point of my life. But I thought to myself 'There's nowhere but up from here'. So I didn't give in."

A friend convinced Long to move to Cedar City in 2011. He was able to find a job working at Gold's Gym (now Vasa Fitness). He knew about SUU and wanted to pursue a degree in medicine, but waited several years before applying for financial reasons.

Long began his academic journey at SUU in 2014 in Dr. Ty Redd's organic chemistry course. "At times I felt like I was back in military boot camp," said Long. "But Professor Redd's demanding, passionate character really helped to refine my grit toward a vocation as a medical scientist."



Long's academic performance ranked him in the 99th percentile of the nation on that year's organic chemistry exit exam nationally standardized by the American Chemical Society. Redd has personally worked with Long through classes and extracurricular research, always finding Long to be self-motivated and enthusiastic.

While at SUU, Long discovered the ultimate channel for his greatest aspiration - science. With the help of invaluable mentors like Dr. Redd, Department Chair Physical Science, Dr. Fredric Govedich, Department Chair of Biology, and Dr. Bruce Howard, professor of chemistry, Long discovered his passion to change the world through science.

As a member of the Rural Health Scholars (RHS) Program at SUU, Long has had service and research opportunities woven into his undergraduate education. Through RHS resources, Long was accepted to a Summer Research Opportunity Program at the University of Iowa. He spent 8+ hours a day researching under Kairuki Maina and Hank Qi at the University of Iowa. In Long's experience, internships are a crucial part of an undergraduate education, especially if graduate school is a future option.

"Theory, which is invaluable, is what you learn at SUU and, may I say, they do a stellar job of teaching that," said Long. "Research skills, the other side of the coin, are what you learn with these internships. Having these two components makes you a force to be reckoned with - it helps you know what you are doing and

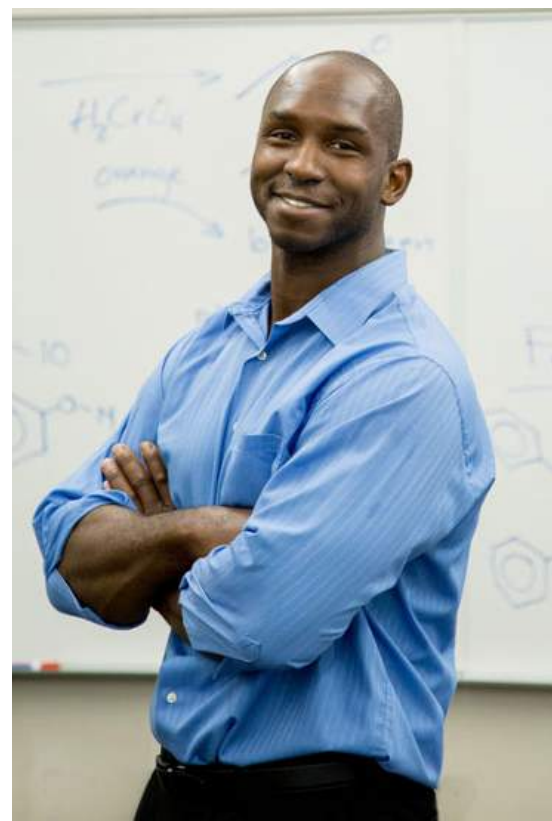
why you are doing it."

Long is also no stranger to lab work. He has spent a considerable amount of time in and outside the classroom collaborating with professors and learning everything he can.

Regarding Long's research and work ethic, Dr. Howard said: "Don is one of the most thoughtful, talented, and hard-working students I've had the pleasure of working with at SUU. His perspective on life is well-grounded, and his interests are wide-ranging. As he continues his education, I'm confident he will become an excellent physician and scientist and will make a real difference in the world."

As a non-traditional and first-generation student, Long understands the struggles working professionals face when deciding to go back to school. But as Long has progressed through his degree, he's found that hard work in school 'pays' in scholarships, grants and invaluable internship opportunities.

Long was involved in four major projects while at SUU. Two of these projects were funded by the National Science Foundation, and two via granted fellowships. Long investigated the effects of a community's unique irrigational system on its local water chemistry and analyzed the effects nutrient enrichment and pharmaceutical pollution has on stream biofilms. He analyzed inhibitors for an enzyme linked to Tuberculosis. He evaluated the effects of genetically modified soy-based baby formula on the methylation/acetylation patterns, reproduction,



and development in *Drosophila Melanogaster* over seven generations. He presented his work at national conferences.

"Going back to school was the best decision I've made," said Long. "I am beyond grateful for the opportunities my professors at SUU have given me to grow as a scientist. They have prepared me for the country's top medical programs and have taught me the value of intensive research."

Long graduated in May 2018 with a double major in biology and nutrition and a minor in chemistry. He plans to apply to medical schools this fall with the goal to study internal medicine. During his gap year, Long plans for a post-baccalaureate program, which entails a year of intensive research at an R-1 institution.

IN OTHER NEWS

WMG COSE FACULTY, STUDENTS AND EVENTS IN THE NEWS



Assistant professor of biology, Carrie Bucklin is an active part of the Supporting Emerging Aquatic Scientists (SEAS) Your Tomorrow program. The SEAS Your Tomorrow project, which received over \$280,000 in grant money from the National Science Foundation with \$19,000 specific to SUU, targets students in the Virgin Islands, a place with a very diverse demographic student population, and gathers data on what engages students in STEM fields and what may turn them away. This is one of 37 programs that make up the "Inclusion Across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science" program -- or NSF INCLUDES.



Farming has always been a part of the American landscape and hay farming has been a part of Colby Spencer's family for generations. This heritage helped Spencer, an agriculture science major from Orderville, Utah, to develop a unique EDGE project. Spencer leased an alfalfa hay field over the summer as part of his project in order to gain experience running a small agriculture business. His project will continue for a few years. It has grown from one field to two and he is now brokering other farmers' hay as well.

Morgan Taylor's passion for the universe and her perseverance in the classroom qualified her to participate in the prestigious Los Alamos National Laboratory Undergraduate Student Program in June. A highly regarded science research internship, Taylor gained remarkable hands-on experience at Los Alamos, which complements her studies in mathematics at SUU. Taylor's perfect academic record and research prowess secured her spot among top applicants competing for one of 24 summer slots at Los Alamos. In addition to SUU, other schools represented will include physics-leaders MIT, Stanford and Caltech.





Riology major and Rural Health Scholar Lacey Woods completed an internship with the University of Utah in summer 2017. The goal of the internship was to study the impact of spontaneous recurrent seizures on learning and long-term memory in mice in order to create more effective models to better evaluate treatments for epilepsy. In order to understand these effects, Woods studied laboratory mice that had different types of induced epilepsy and analyzed slices of their brains with tiny electrodes. Woods said the process was extremely complex and involved ten-hour days where absolute precision was required in order to gain the needed information for the study. The study suggested that mice who were treated with the new intra-amygdala kainate method of induced seizures provide more accurate models to evaluate novel treatments for epilepsy.

To celebrate the Great American Eclipse on August 21, 2017, SUU co-sponsored a free viewing event. Other event sponsors included Cedar City Library in the Park, SUU Ashcroft Observatory, and the Southern Utah Space Foundation. In addition, the SUU Center for STEM Teaching & Learning distributed 5,000 pairs of solar glasses to local elementary schools in nine southern Utah counties to allow children to safely view the eclipse.



Junior nursing student Jake Ross serves the Utah Student Nurses Association as the Breakthrough to Nursing Director. Through this unique position, Ross can help potential nursing students prepare to enter nursing programs around the state. Ross is working with regional directors to change the bylaws of the Utah SNA to ensure that all of Utah's SNA chapters have a Breakthrough to Nursing director to help pre-nursing students. After Ross earns his Bachelor of Science in Nursing, he plans on becoming a Nurse Practitioner and then traveling to India. "I am passionate about global medicine," said Ross.



The SUU Agriculture Club hosted the 2017 Future Farmers of America (FFA) Livestock, Horse, Range & Agronomy Judging Contest at the Diamond Z Arena and SUU Valley Farm in Fall 2017. Approximately 30 FFA Chapters from Utah and Nevada competed in this event. Winning schools received a trophy and top contestants received a belt buckle.



The Department of Engineering & Technology hosted its 16th annual Cardboard Boat Races during the 2017-18 academic year. The Cardboard Boat Races are held each semester for SUU students, engineering majors, visiting high schoolers and community members.

\$113K GRANT IN MICROBIOLOGY

GRANT ENGAGES STUDENTS IN RESEARCH

A National Science Foundation grant includes SUU students in a nationwide collaboration aimed at training future biologists to be scientists through an interdisciplinary, integrative, learning experience. SUU's Biology Program will receive \$113,000 over the next five years, funding new laboratory equipment to train students in important lab skills and improving analysis accuracy.

Dr. Roger Gold, SUU biology professor, collaborated with Rupa Iyer, principal investigator on the grant and founding director of the biotechnology program and the University of Houston College of Technology, on the project. The full grant will spread \$2.1 million to five colleges and universities around the country, all to implement the key components of the UH biotech program.

"Over the years I have worked with Dr. Iyer in the development and testing of the various aspects of these instructional modules," said Gold. "When I joined SUU last year, it seemed natural to integrate these ideas into our classes to give our students the high quality research experience that

our future scientists and innovators will need for success in their careers."

Students carry out scientific research by collecting soil samples and processing them for bacterial strains, logging the results on a map. They are given the opportunity to mine the growing dataset to analyze trends and to draw conclusions. The expanded database they are contributing to will provide a platform for national and global research collaborations between students, faculty, governmental agencies and biotech companies.

"The instructional program funded by this grant helps improve the process of becoming scientists because it allows students to engage in the discovery process from start to finish," said Gold. "By engaging in the actual process of discovery, students learn the skills that they need to become successful scientific researchers."

Gold started at SUU fall of 2016 after working for 12 years at BYU-Hawaii. He's always taught his lab courses as comprehensive research experiences, engaging students in locally-relevant research.



ONE YEAR AFTER THE FIRE

RESTORING PUBLIC LANDS WITH DR. JACQUALINE GRANT



One year after the devastating Brian Head Fire, the community, along with the help of Southern Utah University, is working to restore the damaged lands and bring the mountain back to life.

The wildfire started on June 17, 2017, and raged across both Dixie National Forest and Bureau of Land Management areas. It burned a total of 71,673 acres before being contained almost a month later.

Dr. Jacqueline Grant, Associate Professor of Biology at SUU and award-winning experiential educator, has given the community the opportunity for a meaningful

summer by leading the upcoming Plants and Public Lands class.

“After a fire, getting plants back on the land is a high priority because their root systems help hold the soil and stream banks in place. Massive debris flows of soil, rocks, and trees often take place after fires because surface vegetation is burned away, which exposes the soil to erosion. Debris flows usually are a threat the first two years after a fire, and they can be triggered by as little as a third of an inch of rain falling in a 30 minute period. Flooding will be elevated for several years post-fire, but the danger posed by debris flows should begin to

taper off after the 2018 monsoon season.”

Not only do native plants slow down erosion, they also provide food for wildlife and sustain pollinators such as agricultural honey bees, solitary native bees, butterflies, and hummingbirds.

Dr. Grant’s Plants and Public Lands class is a great opportunity to learn about plants and how land is treated after wildfires. A late summer session of the course was held July 30 – August 3, with one in-class presentation and two field trips. Participants learned about native plants and western fire cycles, and participated in hands-on restoration activities and research to help learn how aspen respond to such a large fire.

“Foresters expect a flush of new aspen growth in southern Utah as a result of the Brian Head fire. If our aspen stands can grow fast enough to escape wild and domesticated ungulate grazing, southern Utah can expect to see spectacular fall color, wildlife viewing, and hunting opportunities in future years.”

LOOKING INTO SPACE

ENGINEERING STUDENT RESEARCH

“ People are curious about the unknown possibilities that lie beyond the limits of sight, so my research is helping to improve the engines that carry vehicles through space.

When Harley Glad started at SUU she had no idea what she wanted to do or be. Her only goal was to get her associate's degree and hopefully find her passion along the way. After starting school, however, she soon narrowed down her academic interests to engineering.

“Once I started taking engineering classes and got to know the professors, I became sold on the idea of engineering,” said Glad. “The more I get into it, the more it fits my personality. Plus, I have some of the greatest professors on the face of the planet who have helped me develop my passion. My time with the engineering department has been priceless.”

Entering her senior year as an engineering major, Glad motivates those around her and demands perfection in her own work.

On top of managing her engineering course load, Glad works as a student assistant manager for SUU's Women's Basketball team and acts as treasurer for the newly-founded Engineers Without Borders club on campus.

“I have learned that success is determined in large part by hard work, and the one thing I am known for is my work ethic,” said Glad. “This means I am always

concerned with my progress as a student, not just the letter grade.”

This summer, Glad conducted research for the University of Alabama on space and propulsion, specifically to improve Hall-effect thrusters used in spacecraft engines. This experience gave Glad the various roles of mechanic, electrician, engineer and researcher.

“Space has always sparked a sense of wonder,” said Glad. “People are curious about the unknown possibilities that lie beyond the limits of sight, so my research is helping to improve the engines that carry vehicles through space. I am learning continually and using skills from all sorts of backgrounds to achieve the desired outcome of this research.”

Glad attributes her academic success to two things: her determination to succeed and her incredible professors at SUU.

“I didn't really understand the magnitude of the lessons my professors were teaching until I came to research in Alabama,” said Glad. “I am surrounded by students from all over the country, and I can say that I was one of the most prepared for graduate school and full-time employment. I was one of the top students because of everything I've learned at SUU.”

Dr. Scott Munro, associate chair and professor of engineering, and Dr. Ali Siahpush, associate professor of engineering, have both helped Glad grow as a student and engineer.

“Dr. Munro and Dr. Siahpush bring a unique perspective of how to be a successful engineer because they have spent years in the field,” said Glad. “They try to teach us these skills and prepare us in the best possible way.”

Munro has taught Glad in multiple engineering courses and has always been impressed with her tenacity and work ethic.

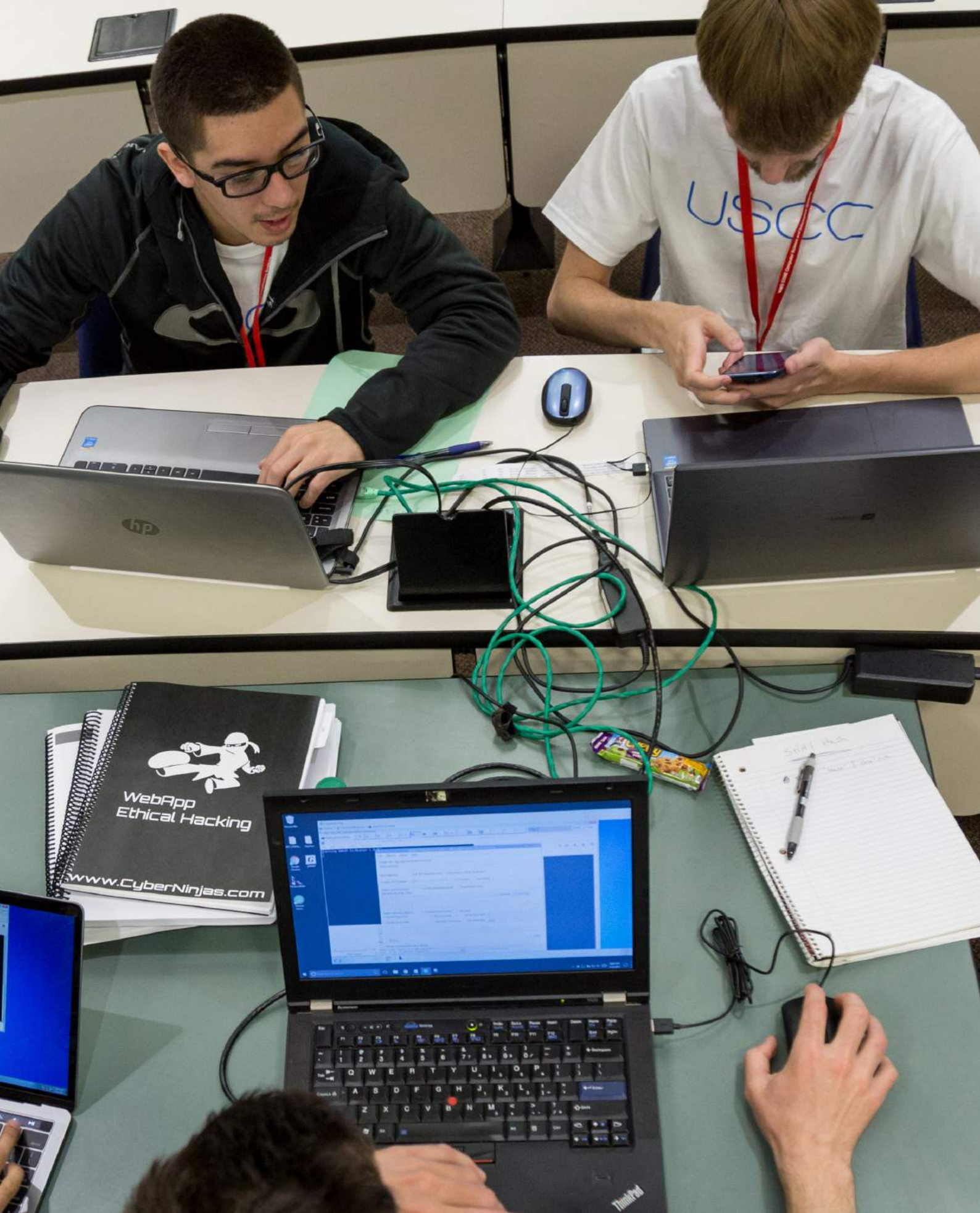
“Given the fact that Harley is significantly involved in supporting SUU basketball, her academic accomplishments are even more impressive,” he said. “She is bright, hard-working, and has a passion for engineering that will serve her well in the future.”

As her direct research advisor at SUU, Siahpush knows Glad has a bright future ahead.

“There is no question that Harley will be an extraordinary scientific researcher,” said Siahpush. “She is very self-motivated, gets along with the people around her, performs well under pressure and always follows through with the task at hand. I have the utmost respect for her in how she conducts her professional life.”

Glad graduates in Spring 2019 with a bachelor’s of engineering with an emphasis in mechanical engineering. She plans on pursuing a master’s degree in mechanical engineering.





USCC

WebApp
Ethical Hacking

www.CyberNinjas.com

ThinkPad

CYBER SECURITY: SEAL TEAM 6

SUU HOSTS WESTERN US CYBER SECURITY BOOT CAMP

The U.S. Cyber Challenge (USCC) held its 2017 boot camp at SUU in July 2017. At the Western Regional Cyber Camp, participants received intensive instruction from professors and SANS instructors. The week ended with a cyber hacking challenge and inspiring speech from Luke McCormack, former CIO of the Department of Homeland Security.

Twenty-four participants attended the camp, ranging from current SUU students to high-ranking industry professionals. After preliminary quizzes in the spring, top candidates were sent invitations to their respective camps across the country. Anyone who received an invitation west of the Mississippi River attended camp at SUU.

"The nation now sees SUU as one of the leaders in cyber security," said Dr. Rob Robertson, Computer Science & Information Systems Department Chair and Director of the Master of Cyber Security & Information Assurance (CSIA).

Landon Beach, a senior computer science major and president of SUU's Cyber Defense Competition Club, was one of two SUU students invited to the Western Regional Cyber Camp. "I felt like I had a lot of training from SUU and was on par with everyone else in attendance," said Beach. "My education

has given me the knowledge and experience to defend against the growing cyber threats in our world."

For the first four days of the camp, participants received instruction from industry professionals, SUU professors and SANS instructors. The USCC Capture-the-Flag competition was held Friday. Teams battled for four hours, hacking into systems and answering trivia questions.

At the awards ceremony, former CIO of the Department of Homeland Security Luke McCormack addressed the camp participants about the importance of cyber security.

"Whether you are at the early or middle part of your career, you are the frontline defense in cyber security," said McCormack. "I always told my employees that there's no SEAL Team 6 ready to break through the ceiling and save the day. You are SEAL Team 6. Recognize that, band together, and bolster your skills through these types of programs. Encourage others to do the same because there is a big need in this country for skilled cyber security professionals."

With SUU's recently established CSIA program, students are being trained by industry professionals

in cutting edge techniques to analyze, identify and defend against cyber threats.

"We see a lot of news about cyber security and a growing gap in the work force, meaning there are a lot more jobs out there than we have qualified individuals to fill," said Robertson. "One of the main goals of these camps is to elevate the skills of our cyber professionals to fill those positions across the nation."

New but Well Established

The Best Schools ranked SUU's Master of Cyber Security & Information Assurance in the nation's top 50 programs in July 2018.

The camp was supported in part through partnerships with Amazon Web Services, the Association for Federal Information Resources Management (AFFIRM), Adaptive Cyber, Cambridge Global, Center for Cyber Safety & Education, CenturyLink, Cyber Ninjas, Cyber Vista, Defense Point Security LLC, the Department of Homeland Security, the Federal CIO Council, (ISC)², Monster Government Solutions, NIC, PCMG, Procession Systems, Queen Associates, SANS Institute, and Sherman Consulting. Local sponsors included Imperva, Nuix, Net Force and Reliaquest.

INTERACTING WITH BRYCE

STUDENT CREATES INTERACTIVE DATABASE FOR PARK & PUBLIC



Students at SUU often have a front row seat to some of the greatest experiential learning available. Mackenzie Cope, a geology major and senior from West Valley City, Utah, had the opportunity to experience this first hand.

The Bryce Canyon Natural History Association, the official partner of Bryce Canyon National Park, asked Cope to create a database with interactive maps describing the geologic complexities and unique aspects of the national treasure.

Cope needed to conduct extensive research into Bryce Canyon's paleontology, structural formations, stratigraphy, geologic history and hiking trails in the park.

"I had to identify rock types, take measurements of fractures and formations and make detailed descriptions of all the geologic layers," said Cope. "I also had to do a literature review of research on the park to support my findings."

One of the challenges she faced was taking the complex concepts and complicated vocabulary of geology and making them easily understandable. In order

Geology Receives Competitive Grant Funding

July 2018: Dominion Energy's 2018 Environment Grant Awards presented \$25,000 to SUU's Geology Field Camp Program. The program is a six-credit course that occurs almost entirely in the field. Students from across the country attend the camp to learn about geologic processes in the spectacular settings of area national parks and other public lands.

to ensure that the average visitor would be able to comprehend the information she recruited her project partner, Becky Lorig.

“She was in charge of the map making and wasn’t as familiar with geologic terms so she was a good test subject,” said Cope. “I also had the opportunity to learn more about Geographic Information System mapping as I helped my partner with the finishing touches on the project.”

“This project was meaningful to me because I like sharing my love for geology with others,” said Cope. “There is so much to learn about geology and it’s so fascinating to understand how the earth works. I think many people would like to learn more about it but it can be hard to completely understand the Earth’s functions. It’s important to me to make the information simpler so it can be shared with everyone.”

Cope submitted her work to the Bryce Canyon Natural History Association. It is under review to be put on the Bryce Canyon National Park website. She also presented this project at the national conference of the Geological Society of America in Denver, CO.

“SUU has provided me with many opportunities through the Intergovernmental Internship Cooperative and through the field work opportunities with the geology program here,” said Cope. “The geology program has provided countless opportunities through internships, field trips, research projects, and class labs that have helped me gain so many professional skills that will help me in my career in the future.”

Cope said her geology professors have been an integral part of her success at SUU.

“Dr. Johnny MacLean, Dr. Jason Kaiser, and Dr. Grant Shimer have encouraged me and provided countless opportunities for me to learn and grow as a student, a professional, and as a person. Their purpose in teaching is solely to help students succeed and pass their passion for sciences on to the next generation. They truly care

about our education and want to help every student understand the subjects. The best part of my experience here at SUU has been the influence of my professors and peers.”

“Mackenzie is the kind of student all faculty members enjoy knowing,” said MacLean. “She has an enthusiasm for learning that is contagious. She works hard to develop as a student and a person, and she has fun all along

Five Reasons to Study Geology at SUU

Students who major in geology at SUU get **significant hands on experience** via **field trips** and other opportunities in the natural laboratory that is southern Utah. Twenty national parks and monuments are located within a 5 hour drive from Southern Utah University making it the ideal location to major in geology. SUU’s undergraduate geology program takes advantage of some of the most diverse geology in North America.

The SUU Geology department trains students for professional, academic, governmental or teaching careers in the Earth Sciences. The geology major is research-oriented with **strong lab and field components**. SUU has an x-ray analysis facilities, a complete sample laboratory and a state-of-the-art GIS lab to be used for individual research, class work and group projects.

Active geology majors can apply for **internships with partner institutions** in state and federal government. Careers range from mining and oil industry positions, to environmental monitoring and consulting, outdoor resource management and recreation and Earth science education. The possibilities are endless, as a background in geology is a solid foundation for many disciplines.

In addition to internship opportunities, geology majors are eligible for a **wide range of scholarships and grants** from academic organizations like the Geological Society of America or the Association for Women Geoscientists, or honor societies like Sigma Gamma Epsilon. These funding sources can open doors to research opportunities, or simply reward students for their hard work and help offset the cost of tuition.

Geology majors have a multitude of **opportunities to engage in research** while at SUU. Geology majors present their findings at both local and national conferences and have a good record of publication in peer-reviewed journals, a rarity in undergraduate education.

CREATING PATHWAYS

SUU SUPPORTS AEROSPACE WORKFORCE INITIATIVE



A new collaboration between Iron County School District, Southwest Technical College (STECH), SUU and MSC Aerospace will provide a Stackable Credential Pathway for students to quickly move into the high paying aerospace and manufacturing industry.

Dr. Richard Cozzens, associate professor in the Department of Engineering & Technology at SUU, is the Principal Investigator for the initiative. Cozzens has been working with STECH, Iron County School District, MSC Aerospace and other industry partners for many years on numerous grants and projects and has built a strong working relationship with each partner. These many years of collaboration were critical in helping Cozzens and the partners

recognize the need and lay the groundwork for this particular initiative.

“Being awarded the Aerospace and Manufacturing Strategic Workforce Initiative is exciting,” said Cozzens. “It is something we have been working on for several years, but we now have the resources to make it happen.” Cozzens sees this as an opportunity to assist high school counselors, teachers and parents in guiding students to the appropriate educational credential. These defined pathways will include some innovative educational and occupational coordination between Iron County School District, STECH, SUU and industry partners. The idea is that students will be motivated by having a clear and effective path to a rewarding career in a manufacturing (and other STEM related) careers, thus supplying the local businesses with skilled employees.

The southwest portion of Utah has unique needs in aerospace that are continually growing. The impact of just one successful skilled job placement in Iron County has the same economic impact as 11.48 skilled job

placements in Salt Lake County. This initiative will grow the number of skilled workers available in Iron County.

“STECH and SUU have a positive track record of working collaboratively to create academic and career pathways which begin in high school and allows students to continue their education through certification and degree programs,” said Will Peirce, vice president of instruction at STECH. “We are excited about the prospect of expanding our collaboration and providing additional opportunities for our students to take advantage of stackable credentials which will provide multiple entry and exit points preparing them for new and advanced employment in high-demand technical careers.”

SUU and STECH have the same goal in mind; they want to better serve their students and provide multiple options for success to prepare them for the workforce. The Southwest Aerospace and Manufacturing Strategic Workforce Initiative is a stepping stone in a greater movement to bridge tech schools with four-year institutions.

IMPROVING INDUSTRY

ENGINEERING MAJOR OPTIMIZES PLANT PRODUCTION PROCESS

As an engineering major at Southern Utah University, Jacob Carter has had multiple opportunities to directly apply his education to real-world experiences. From working with businesses to presenting his research at state-wide conferences, Carter utilized his skills in engineering, project management and communication to effectively solve problems.

For his senior design project in the engineering program, Carter worked with Intermountain Power Service Corporation (IPSC) to improve the plant's coal production process. The system at IPSC had issues with the granulators clogging and plugging, resulting in the dust collection system shutting down. Carter, along with fellow engineering students Justin Christensen and McKay Swainston were asked to evaluate this problem and determine an appropriate solution. The group gained valuable insights from and were guided through their project by Dr. Ali Siahpush, associate professor of engineering.

"I learned a lot during this project, both in the technical side of engineering and working with others,"

said Carter. "We held monthly meetings with the managers at IPSC, so the work we were doing had a direct application to an operating company. It made my entire group more dedicated to solving the problem in the most financially-responsible way."

After extensive testing and prototyping, Carter discovered the inefficiencies of using the plant's current pin mixer system and suggested they switch to a pug mill. This solution increased the safety of working at the plant as the coal dust in the air was considered an explosion hazard and was unsafe to inhale. IPSC was able to make these changes and reduced the cost of maintaining the dust.

"This project taught me many skills relating to school and my future career," said Carter. "I learned how to properly manage a project, communicate effectively with a corporation, and how to prototype and develop my ideas."

Carter has worked closely with Dr. Siahpush almost every semester of his undergraduate degree. Under Siahpush's supervision, Carter has published two papers

in national journals and has presented at various conferences promoting undergraduate research.

"As a student, Jacob does an excellent job in class and in his homework," said Siahpush. "As a researcher, Jacob is awesome. He thinks outside of the box and has enough technical experience to thoroughly analyze a problem and come up with a viable solution. Then it comes to actually building and performing the task, and he's fantastic. Jacob is the whole package."

Carter graduated in December 2017 and has accepted a position as a mechanical engineer at CargoGlide in St. George, Utah.



WHY STEM CAREERS LACK WOMEN

WHAT ONE PROFESSOR IS DOING ABOUT IT

Even with a higher priority placed on science, technology, engineering and math (STEM) throughout education in the US, only a fraction of girls are likely to pursue a STEM career. According to the National Center for Education Statistics, while more than 57 percent of college undergraduates are women, only 18 percent progress into STEM careers. With a clear gap, Microsoft set out to better understand what causes girls and women to lose interest in STEM subjects and careers, as well as what strategies have the greatest potential to reverse the trend.

According to Microsoft's Closing the STEM Gap: Why STEM Classes and Careers Still Lack Girls and What We Can Do About It, the goal of the study "was to inform our work in this area and to share learnings with schools, government leaders, nonprofits, employers and others. What we learned is that conditions and context can make a significant difference to girls, young women and their interest in STEM. And the solution doesn't necessarily require a curricula overhaul."

The study began with focus groups of 44 middle school

and high school girls. The girls shared their views, experiences, and feelings towards STEM in a candid environment, laying the groundwork for a quantitative survey of 6,009 girls and young women from ages 10-30 examining attitudes toward STEM, school and the workforce pipeline. The research was bolstered with a number of interviews with experts dedicated to supporting girls and young women in STEM.

One of these experts was Dr. Shalini Kesar, Associate Professor of Information Systems at SUU.

"The stubborn gender disparity in STEM fields has sparked important debates on the underlying reasons," said Kesar. "Some attribute the gender disparity to social and infrastructural factors, lack of mentors and role models, and lack of awareness about what these fields offer in terms of educational and career opportunities. Others point to studies that indicate traditional mindsets of computing as 'boring' and 'only for boys.'"

In an effort to decrease the gap, SUU has partnered with the National Center for Women in Information Technology (NCWIT)

to reverse the trend in rural areas by sponsoring an Aspirations competition for girls who are active and interested in computing and technology. The culmination of the competition was an award ceremony held in March 2018 SUU.

Kesar has spearheaded Southern Utah Aspirations for high school girls across 14 counties in Utah and Nevada. In the last five years, more than 400 high schools have applied to the free online competition.

"This program gives these girls an aptitude in computing and ambition to continue in this field," says Kesar. "Our goal is to build awareness about the STEM and computing fields and to give participants confidence in the skills they acquire."

This year, with the support of parents and educators, 98 girls competed from high schools throughout southern Utah and Nevada. The competition is a platform for aspiring young women to showcase unique software coding, web design, and information technology skills.

Beyond the Aspirations program,

girls are now attending SUU and sharing their passion. They are volunteering their time for Aspirations as well as advocating the importance of increasing participation of women in computing.

From rural Delta, Utah, Nikki Wood is now on her way to completing a degree in Computer Science at SUU.

“Growing up, I was very indecisive about what degree I wanted,” said Wood. “I’ve always loved working with computers and being able to communicate and create with technology, but I had never honestly considered doing so for the

rest of my life. I grew up in a very small town, where technology was not only very unpopular, but even discouraged when I showed interest in it.”

A three time Aspirations regional winner, Wood credits the Aspirations program for her understanding of the opportunities she could have as a woman in this field. “When I found out about the Aspirations program I was 15, it opened my eyes to the world of technology and all the opportunities it could give me. I had finally found the role models I so desperately needed and a community that made me feel that I belonged and would succeed. The

Aspirations program helped me realize that programming wasn’t ‘just for men’-- something I didn’t even know I had convinced myself [of] until that moment.”

Accessibility and awareness are the barriers girls face, according to Kesar. To overcome these obstacles participating students receive mentoring by high school teachers to help encourage and improve the skills they now possess. Kesar stresses the importance of the educators, saying that they are the pillar of this program. “They help motivate their students, empower them, and advocate for young women in these fields.”

Closing the STEM GAP: Why STEM Classes and Careers Still Lack Girls and What We can Do About It

Microsoft and Kesar’s study found that conditions and context can make a significant difference to girls, young women and their interest in STEM. Their recommended solutions are straightforward and can be implemented without a curricula overhaul.



Girls and young women have a hard time picturing themselves in STEM roles. They need more exposure to STEM jobs, female role models, and career awareness and planning.



Girls don’t initially see the potential for careers in STEM to be creative or have a positive impact on the world. But even a little exposure to real-world applications of STEM knowledge dramatically changes their outlook.



Educators can foster a “growth mindset” among their female students by tapping into their willingness to work hard for results.



Girls who participate in STEM clubs and activities outside of school are more likely to say they will pursue STEM subjects later in their education. The kinds of experiments and experiences girls are exposed to in these activities can provide insights for how to enhance STEM instruction in the classroom.



Encouragement from teachers and parents makes a big difference in girls’ interest in STEM—especially when it comes from both teachers and parents.

SUU UCUR CONFERENCE

■ SUU HOSTS UTAH CONFERENCE ON UNDERGRADUATE RESEARCH ■

The Utah Conference on Undergraduate Research (UCUR) was hosted by SUU in February 2018. The conference celebrated academic, professional, and personal achievements resulting from undergraduate research projects or creative endeavors.

Students from all of the Utah higher education institutions attended. UCUR provided an excellent opportunity to students to present his or her work in a scholarly setting to students, faculty, field specialists, and community members. Presentations included both visual and oral displays of work in all academic disciplines, from art history to

molecular biology as well performance of creative research within the visual and performing arts.

“UCUR 2018 at SUU has been in the planning stages for over a year,” said Dr. Mackay Steffensen, Undergraduate Research and Scholarship Program director and associate professor of chemistry. “Students from institutions across the state put together more than 350 presentations, showcasing undergraduate research and creative projects in a range of disciplines. This is one of the larger UCUR conferences and promises to showcase the best of higher education in Utah.”

The Utah Conference on Undergraduate Research (UCUR) was modeled after the National Conference on Undergraduate Research (NCUR) and organized by a committee of representatives from educational institutions across the state. Since its founding, UCUR has served as the culminating event of Undergraduate Research & Creative Achievement Week as designated by the Governor of Utah.

UCUR is hosted by a different university in Utah each year. Southern Utah University last hosted this event in 2010.



NATIONAL RECOGNITION

NATIONAL GUIDE FOR COLLEGES ENDORSES COSE PROGRAMS



Already recognized by Colleges of Distinction for its innovative approach to education, Southern Utah University has been awarded Field of Study Badges for its nursing and engineering programs. The 21st-century job market now demands employees who are both stellar communicators and critical-thinkers, and it is with SUU's personalized attention and hands-on approach to career development that its students are especially prepared to take on the postgraduate world.

career-oriented learning experience," said SUU Provost Dr. Brad Cook. "SUU will continue to distinguish itself as a premier higher education institution in the Intermountain West throughout the coming years."



"At SUU, we always strive to provide the very best high impact practices for our students and their futures through an engaged,

"We are ecstatic to celebrate Southern Utah University for its exceptional commitment to student success," said Tyson Schritter, Chief Operating Officer for Colleges of Distinction. "Building upon its extensive curriculum, as well as its impressive engagement of High-Impact Practices, SUU continues to stand out through its stance as a leader in professional education."



ASK OUR EXPERTS

PROFESSOR KNOWLEDGE AVAILABLE TO PUBLIC

SUU faculty, administration and staff possess a wealth of experience and expertise to share with the public on a local, regional, national and international level. To facilitate this transfer of information, the SUU website now includes an Expert Directory. The directory gives journalists, conference organizers, educators and others biographical information and media files to help them find the most relevant expert for their needs.



Carrie Jo Bucklin, Ph.D Assistant Professor of Biology

Areas of Expertise

Virgin Islands Debris, Biology, Biology Education, Discipline Based Education Research, Environmental Biology



Richard Cozzens, Ph.D Associate Professor of Engineering Technology

Areas of Expertise

CATIA Specialist, Solidworks, Aerospace Manufacturing Research, 3D Solid Modeling



Robert Eves, Ph.D Dean of Walter Maxwell Gibson College of Science & Engineering

Areas of Expertise

Geochemistry, Chemistry, Educational Outreach, Teacher Training, Undergraduate Research, Land Management, Geology



Fred Govedich, Ph.D Associate Professor of Biology

Areas of Expertise

Evolutionary Biology, Population Biology, Predator Prey Interactions, Leech Systematics, Animal Behavior



Jacqueline Grant, Ph.D Associate Professor of Biology

Areas of Expertise

Wildlife Restoration, Green Infrastructure, Ecological Restoration, Water Conservation, Native Plants



Scott Hansen, Ph.D **Chair of Department of Engineering Technology**

Areas of Expertise

3D Drafting, Autocad, Engineering Technology, Vocational Education, Engineering, Industrial Technology



William Heyborne, Ph.D **Director of SUU Center for STEM Teaching & Learning/Associate Professor of Biology**

Areas of Expertise

Entomology, Zoology, Amphibians, STEM Teacher Leadership, Biological Pedagogy, Reptiles, Biology



Jason Kaiser, Ph.D **Assistant Professor of Geology**

Areas of Expertise

Tectonics, Geological Mapping, Petrology, Geochemistry, Volcanoes, Volcanology



Shalini Kesar, Ph.D **Associate Professor of Information Systems**

Areas of Expertise

Electronic Governance, Network Administration, Cyber Security, Women in Computing and IT, Cyber Crime



Johnny MacLean **Assistant Professor of Geology**

Areas of Expertise

Field Geology Investigation, Tectonics of National Parks, Utah National Parks, Tectonics, Geology of Southern Utah



Scott Munro, Ph.D **Associate Professor of Engineering**

Areas of Expertise

Propagation, Unmanned Aerial Vehicle (UAV) Flight Control System Design and Testing



Ty Redd, Ph.D **Chair of Department of Physical Science**

Areas of Expertise

Environmental Contaminants, Water Research, Physical Science, Molecular and Cellular Biology



Matt Weeg, Ph.D **Associate Professor of Biology/Director of Center of Excellence for Teaching & Learning**

Areas of Expertise

Communication and Behaviour, Audition, Pathophysiology, Physiology, Animal Behavior

Editor's Note: this WMG COSE excerpt of the SUU Expert Directory was current as of July 2018. Visit www.suu.edu/experts for the current Expert Directory.

FIGHTING PARKINSON'S

PARKINSON'S DISEASE AWARENESS EVENT



On April 4, SUU and Southwest Parkinson's Disease Support Group hosted a Parkinson's Disease Awareness Event to increase and raise public awareness regarding this neurodegenerative disease. The event, held at Snap Fitness in Cedar City, was held as part of Parkinson's Disease Awareness Month.

The event provided information to the community about Parkinson's Disease and educated people about SUU's successful Rock Steady Boxing program, the Southwest Parkinson's Disease Fitness Alliance and SUU's Rural Health Scholars (RHS) program. The event showcased the progress participants have made since October, and featured information from Intermountain Healthcare,

Mike's Running Store, Brookdale Senior Living and Memory Care, and the Parkinson's Disease Support Group.

The Southwest Parkinson's Disease Fitness Alliance was created through SUU's RHS program and a retired faculty member.

Dan Dail, past department chair of agriculture and nutrition science at SUU, was diagnosed with Parkinson's Disease in 2009 and struggled to find an effective activity that helped reduce his symptoms. With a drive to stay positive, Dail explored different therapy options.

"An out of town physical therapist brought boxing gloves to a session one day," said Dail. "Afterwards, he

told me I was one of the fastest guys he's worked with, and I was hooked."

Dail researched PD boxing programs in Utah, but the closest facility was located more than 200 miles away. Seeing a need in his community, he brought his idea to RHS and was connected with Jens Howe.

Jens Howe, a pre-physical therapy student and RHS member, helped launch a non-contact boxing clinic for Iron County residents who are struggling with the disease. Since he started working with the project, Howe has seen improvements in participant's coordination, balance, flexibility and overall well-being.

In early 2017, Howe trained with the international organization Rock Steady Boxing and was certified as a non-contact boxing trainer. He learned how PD affects people and that forced exercise is one of the most effective ways to delay the progression of the disease.

"I want people locally to know that we're offering those affected by Parkinson's Disease a way to



fight back,” said Howe. “We are committed to providing the help and resources that can be difficult to find in rural communities like ours.”

Boxing-inspired exercise programs are growing in popularity with men and women of all abilities. Research shows these exercises slow the progression of the disease thus enhancing walking ability, flexibility, balance and overall well-being. To date, no medication has been able to do this.

“Jens is one of those rare people who has found the true reward in helping others,” said Dail. “He helps out when no one is looking, with no expectation of receiving recognition. He exemplifies the difference between involvement and commitment and will be remembered for his contribution to people with PD in our community and SUU Rural Health Scholars.”

Howe graduated in Spring 2018 with plans to enroll in physical therapy school. However, the foundation he created for the daily boxing classes will continue. Four students from RHS have been trained and certified



The Southwest Parkinson Disease Fitness Alliance gives students an inside view of what their future will look like working in the medical field. This improves their technical skills, prepares them for admission into graduate healthcare programs and increases their empathy and coping skills while working with individuals suffering from illnesses or long-term disease.”

through the national Rock Steady Boxing program with certification costs being covered by RHS to ensure the fitness courses’ future success.

“Opportunities to create community-based health programs that our students can manage and operate are vital to the mission our department,” said Karen Ganss, RHS assistant director. “The Southwest Parkinson Disease Fitness Alliance gives students an inside view of what their future will look like working in the medical field. This improves their

technical skills, prepares them for admission into graduate healthcare programs and increases their empathy and coping skills while working with individuals suffering from illnesses or long-term disease.”

Daily PD fitness courses involve non-contact boxing and the Lee Silverman Voice Technique-based physical therapy program. Future courses could include yoga and stationary cycling, as well as lectures on topics like nutrition.

Rural Health Scholars

The Utah Rural Scholars (RHS) Program prepares students for admission to graduate healthcare programs. Through a series of academic and non-academic experiences, students increase their likelihood of being accepted into medical, dental, physical therapist, occupational therapist, physician assistant, nursing, podiatry, optometry, veterinary, healthcare administration and allied health schools.

Rural Health Scholars offers many benefits to members. Students are given the opportunity to select from different activities, trips, and courses. Information is provided through weekly emails, university seminars, and healthcare articles to ensure students are prepared to enter today’s world of health care.



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