

# Sonoma State University

## SCHOOL OF SCIENCE & TECHNOLOGY

Volume 2, Issue 1

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### A Note from the Dean

Greetings from the School of Science & Technology!

The fall semester is underway with more students than ever in our classrooms. There are a record breaking 9050 SSU students with 1746 freshman and 900 transfer students arriving on campus for the first time in August. Science & Technology (SST) majors are at a new high—with over 1800 students pursuing degrees in our school.

This issue of our newsletter highlights our ongoing efforts and achievements in SST as we work to educate and inspire students to be lifelong contributors to the future of our region, of California, and beyond. While it continues to be a challenging environment for higher education in California, we are committed to meeting these challenges and remaining focused on educating our future leaders.

Among our highlights is SST's *S3: STEPPing Up STEM at SSU* program supported by the National Science Foundation, which is off to a terrific start. The program seeks to increase retention and graduation rates of STEM (Science, Technology, Engineering and Math) students by providing them with an inquiry-based educational experience based on the multi-disciplinary theme of environmental sustainability, improving STEM student support services, and providing undergraduate research opportunities. A new freshman course, SCI 120: Sustainability in My World, is already impacting students as they investigate the Russian River Watershed while transitioning to college life. The SCI 120 plenary lectures exploring issues of environmental sustainability are open to the public and are part of SSU's Water Works' series of assorted lectures, performances, and exhibits across campus—learn more at [www.sonoma.edu/waterworks](http://www.sonoma.edu/waterworks).

This fall also marks the long awaited opening of the performance hall at the Green Music Center. We hope you will be able to enjoy a GMC concert or other event with us! And, as always, we are grateful to you for supporting SST as we strive to understand and improve our world.

Lynn Stauffer, Dean  
School of Science & Technology



Dr. Lynn Cominsky

## LYNN COMINSKY NAMED WOMAN PHYSICIST OF THE MONTH

Professor Lynn Cominsky, chair of the Physics and Astronomy Department, was named the Woman Physicist of the Month this past September by the American Physical Society's Committee on the Status of Women in Physics (CSWP). The CSWP names one female physicist a month. They make their selection from a group of individuals nominated for this award by people whose lives have been positively impacted by the nominee. Professor Cominsky's exceptional contributions in education and public outreach, committee work, research, grant work, and teaching—she's a veritable powerhouse!—made her the apparent choice for the award. Read more at: [www.aps.org/programs/women/scholarships/womanmonth/2012.cfm](http://www.aps.org/programs/women/scholarships/womanmonth/2012.cfm)

## HOT NEWS FROM THE DEPARTMENT OF CHEMISTRY

The Department of Chemistry has had a stellar year for grant funding. Principal Investigators (PIs) Lillig, Works, Fukuto, and Farmer were successful in obtaining a NSF Major Research Instrumentation award for a 400 MHz NMR spectrometer. Prof. Perri has also been providing instrument support in the form of data management at IT processes. Despite the national helium crisis, as of mid-September the installation is almost complete and the instrument is already included in the fall semester Senior Integrated lab capstone course, Chemistry 401. Over the past year, chemistry faculty also won multiple CSUPERB research awards and PIs Fukuto and Works were awarded NSF Research at Undergraduate Institution awards. PI Fukuto rounded out the grant awards with an NIH AREA grant as well. We also had a student fresh out of general chemistry, Matt Applesmith, win a CSUPERB Presidents' Commission Scholar Award for a summer research experience in NMR with PI Lillig.

The Department was also excited to be the first department on campus to start its own Freshman Year Learning Cohort of Chemistry and Biochemistry majors. We have a whopping 35 new freshman majors all enrolled in classes together. As a group they are taking Quantitative General Chemistry (CHEM 125), calculus, and a new GE Area A3 course entitled *Thinking Like a Scientist*, taught by our own Carmen Works. We are looking forward to this group becoming part of our chemistry community.

If you are already a part of our alumni chemistry community, keep a look out for our next online update that we are preparing to send out this semester. If you are not part of our community but would like to join, you can friend us on Facebook at "Sonoma State Chemistry Alumni." All majors are welcome!

## CHARLIE EIDEM



By all accounts, Charlie Eidem was a truly amazing guy. Born in Minnesota, Charlie decided to attend college in California after visiting the state and falling in love with it. He was accepted into the Computer Science program at SSU and immediately became an invaluable member of the department. He voluntarily spent hours researching and helping create the department's first fleet triple boot computers; he would regularly

stop by the CS labs to see if he could be of any help to the instructor or students; he worked as both a lab assistant and CS 101 grader for a few semesters, excelling in both positions. As Professor Ali Kooshesh, CS Department Chair, says, "Hundreds of students benefited from his tireless work."

Most of all, however, Charlie was everyone's friend. "I myself always enjoyed Charlie's sense of humor and his love of discussing all things computers," says Glenn Carter, lecturer. "He was a friend, as well as one of our students. He was a mentor to other CS students, loved anything Viking [...], he was brilliant, artistic, and funny as [heck]," remembers Gina Voight, Administrative Coordinator in the CS Department while Charlie was a student. "And he was seriously into metal music...the more head banging the better!" she adds.

Sadly, Charlie experienced complications from an organ transplant—he suffered from Hirschprung's Disease—and passed away December 28, 2010. In honor of Charlie's generous and kind spirit and his love of all things computer science, his parents started the Charles Eidem Memorial Assistantship fund to support student assistantship in the department. To date, the fund has supported students working on the SSU iPhone App, a student assistant for the CS Department's systems administrator and friend of Charlie's, Roger Mamer, and a student to redesign the department's webpage.

## TWENTY YEARS OF EXPANDING GIRLS' HORIZONS IN SONOMA COUNTY

On April 14, 2012 Sonoma State University hosted the 20<sup>th</sup> annual Sonoma County Expanding Your Horizons conference. More than 120 seventh and eighth grade girls from Sonoma, Lake, and Mendocino counties spent the day exploring careers in math, science, and engineering by participating in hands-on workshops. Women who have chosen fields in these areas prepared workshops to get the girls interested in possibly pursuing a career in a STEM (science, technology, engineering, math) field.

The eighteen workshops ranged from topics in engineering, where the participants built a strong structure just from paper ("Build a geodesic dome"), to earth science, where students literally got to play in the mud ("Got Mud?"). In the workshop "Computer Animations with Alice," SSU computer science professors, assisted by their students from WICS (Women in Computer Science), helped the participants write their very own computer animations. "It was really fun to learn how to animate a little bunny," commented one girl. Another girl said she plans to download the program at home right away.

Many of the girls attending the conference had a great day on campus, commenting that the day was fun and inspiring. You know that the day was a success when a 13- year old girl tells you: "I liked how the teachers were all women. This showed me it was really possible for me to be an engineer."

Jana Putney, Julie Corrigan, and Kaitlyn Vigue.



Nancy Hairston, Elyse DeSalvo, Chriselle Christotomo, Suzanne Rivoire, and Julie Corrigan at the check-in desk.

The middle school girls had a chance to experience a very lively campus as the 2012 EYH conference coincided with Seawolf Decision Day. Many SST faculty and student volunteers were engaged in both events, often switching back and forth from EYH workshops to advising sessions with potential students.

Thanks to all the SSU women who work so hard for our programs and the community! You are awesome!

## COMPUTER SCIENCE STUDENT PLACES AT ACM COMPETITION

Computer Science student Stephanie Schmidt won third place in the Association for Computing Machinery (ACM) undergraduate Student Research Competition, held at the ACM Technical Symposium on Computer Science Education in Raleigh, North Carolina in March 2012. Stephanie was one of only thirteen undergraduates worldwide and the only one from California to advance to the international Grand Finals round of the competition. Her project, "Modeling the Power Consumption of Computer Systems with Graphics Processing Units," was advised by Dr. Suzanne Rivoire, Computer Science, and supported in part by a Computing Research Association Collaborative Research Experiences for Undergraduates grant.

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## FULBRIGHT SPECIALIST GRANT

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Many opportunities for faculty to contribute to scholarship in the global community exist. Dr. Michelle Kelly from Nursing was awarded a Fulbright Specialist grant to lend a hand with designing, teaching, and evaluating the only Masters in Nursing (MN) program in Uganda.

The Fulbright Specialist Program matches academics with host institutions with needs for specific expertise. Uganda University's School of Nursing has 4 four-week intensive modules for MN students. The Ugandan School of Nursing requested doctoral prepared nursing faculty to lead both curriculum delivery and evaluation of learning. The aim of the Fulbright Specialist was to teach the teachers best practices in teaching.

Michelle is pictured below with students from her Uganda University MN class. The Ugandan class of students is currently nurse educators in public and private nursing programs throughout Uganda and have worked and saved to attend graduate school.

In getting to know the students, Michelle heard the amazing stories of their lives that reflect determination and sacrifice in their journey to become grad students. The majority of students were from rural areas and described financial challenges in paying school fees from the start of their education in primary school. It was normal for students to go without to garner sparse resources for their education: "I went without any meal after breakfast so my dad could pay the tuition," said one student.

Students also described harsh experiences with learning in the Ugandan school system. A common expectation was that students were to sit quietly and write down all the information possible as the teacher dictated notes. In the classroom, interaction between teacher and students was very formal, and questions and discussion were often discouraged. Students were tested at the end of each semester in lengthy exams requiring extensive rote memorization of dictated notes.

In the MN coursework, the Ugandan nursing educators were exposed to adult learning theory and were able to move away from a formal one-way, teacher-centered style inherent in many schools. Over the four weeks, students were able to develop and practice teaching in highly interactive, student-centered ways. The response of the MN students to the new interactive teaching approach can be summed up by one student's anonymous evaluation comments:

*"I didn't want to be the teacher I had in nursing school. In this class I learned the best tools for both showing respect to my students and getting them to reach their potential, because in this class I reached my potential!"*



Michelle Kelly, front and center, with her Ugandan MN class.

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## ADAPTIVE PHYSICAL EDUCATION CONFERENCE IN ROHNERT PARK

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Kinesiology faculty Bekkie Bryan and Elaine McHugh are co-directors of the National Adapted Physical Education Conference, scheduled for November 8-10 at the Doubletree Hotel in Rohnert Park. Over 200 educators who work with children and adults with disabilities are expected to attend this well-known annual conference that attracts local, state, and nation-wide participation from college/university and K-12 school professionals. AXIS Dance Company—featured on "So You Think You Can Dance"—is scheduled to present, along with SSU graduate, physical educator, coach, motivational speaker, and poet Xerxes Whitney.

## MATH DEPARTMENT CHAIR BRAVES ICY S.F. BAY WATERS

For the past year, Sam Brannen, Mathematics and Statistics Department Chair, has been training for the 17<sup>th</sup> annual Alcatraz Invitational Swim—a swim race in the icy waters between Alcatraz Island and San Francisco's Aquatic Park, a distance of 1.25 miles. Besides swimming in the Kinesiology Department pool every day, his training entailed limiting his wardrobe to t-shirts, shorts, and flip flops year-round to better prepare him for the chilly water.

The race took place on September 8 with swimmers ranging in age from 7 to 73. Brannen made the swim in the 58 degree water in a speedo, a cap, and goggles and finished in 57 minutes and 52 seconds, placing him 427<sup>th</sup> out of 861 competitors. The fastest time was 29 minutes and 40 seconds by Peter Kline of Salinas (23 and in a wetsuit). Ever the mathematician, he stated, "the mean average time for men ... was 57 minutes, and that was my time as well. So, my placement was near the median (for all swimmers) and my time was equal to the mean (for men). In other words, I was very average!"

Brannen with his wife, daughter, and mother.



## NUSTAR LAUNCHES!

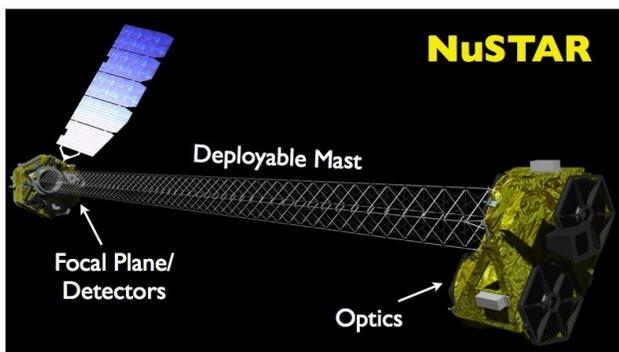


Image source: [www.nustar.caltech.edu/about-nustar](http://www.nustar.caltech.edu/about-nustar)

On June 13<sup>th</sup> NASA's NuSTAR (Nuclear Spectroscopic Telescope Array) was successfully air-launched by Pegasus-XL from the Stargazer L-1011 aircraft at Kwajalein Atoll in the Pacific Ocean. NuSTAR's telescoping 10 meter mast successfully deployed over the next few days allowing the satellite's tightly nested Wolter mirrors to focus x-rays on to the primary detector. NuSTAR's primary targets include supermassive black holes, active galaxies, and supernova remnants. The NASA E/PO group at SSU will be creating educational content based on the science of NuSTAR's mission including a NuSTAR educational guide for secondary school learners.

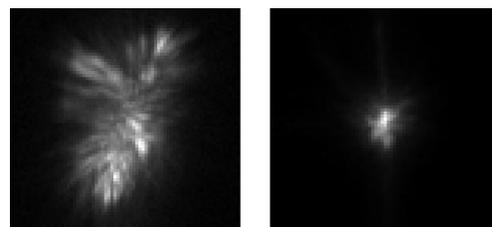
## SHARPENING OUR VIEW OF THE UNIVERSE

Dr. Scott Severson of the Department of Physics & Astronomy achieved a milestone this past summer in his work on making sharper astronomical images. The technique, called Adaptive Optics (AO), uses small silicon mirrors to "straighten" the path of light and remove the blur of the Earth's atmosphere.



KAPAO Alpha.

In June, Dr. Severson, along with his colleague Dr. Phil Choi of Pomona College and several undergraduate students,



Arcturus without (left) and with (right) AO.

succeeded in building a prototype AO system (named KAPAO) and using it on the Table Mountain Observatory one-meter telescope. SSU Physics alumnus Blaine Gilbreth broke the news on Facebook, "KAPAO is running!"

Students at Sonoma and Pomona are involved in all aspects of the development of this cutting edge instrumentation: optical design, mechanical engineering, fabrication, alignment, software development, and astronomical data reduction. Future work includes replacing the prototype's off-the-shelf optics with custom high-performance optics, adding an infrared camera, and conducting the astronomical surveys made possible with this system.

# SST FUNDING NEWS

## **SECOND YEAR OF NASA SPACEGRANT FUNDING AWARDED**

Lynn Cominsky, NASA E/PO and Physics & Astronomy, has received a second year of funding from the NASA Spacegrant: Improving the STEM Pipeline program. The new award is for \$10,000 and will support student research experiences in aerospace related fields in addition to other student support services in STEM.

## **NASA E/PO FUNDING NEWS**

Lynn Cominsky's NASA Education and Public Outreach group received \$350,000 in funding over two years to support the Nuclear Spectroscopic Telescope Array mission (NuSTAR), which was successfully launched into orbit on June 13, 2012. NASA E/PO also received funding from NASA's Education & Public Outreach for Earth & Space Science (EPOESS) Program for their project "S4: Small Satellites for Secondary Students." The award is for nearly \$550,000 over three years.

## **CSUPERB GRANTS**

CSUPERB (CSU Program for Education and Research in Biotechnology) is a system wide program supporting advancement in biotechnology across the CSU.

- Farid Farahmand, Engineering Science, was awarded a \$25,000 CSUPERB Entrepreneurial Joint Venture Matching Grant for his proposal titled "Developing a High-precision Movement Monitoring System for Patients Undergoing Radiation Therapy Treatments."
- Michael Cohen, Biology, received a \$15,000 CSUPERB Research Development (RD) Grant for his project "Generation and activity of nitro-isoprenes in plants under heat stress."
- Chemistry student Matt Applesmith received a CSUPERB Presidents' Commission Scholar Award of \$8,000 for his project "Acquisition of NMR Structural Data for Membrane-Associated Antimicrobial Peptides: A Summer Research Immersion in Protein NMR."
- Chemistry student Christopher Campbell received a CSUPERB travel award (\$1,424) to attend the ACS Spring 2012 National Meeting.

## **U.S. DEPARTMENT OF ENERGY FUNDING**

Computer Science professors Suzanne Rivoire and Ali Kooshesh have been awarded \$26,433 by the Department of Energy to support undergraduate student research in collaboration with the Oak Ridge National Lab. The students' research will improve the energy efficiency of large-scale supercomputing centers.

## **LSAMP FUNDING EXTENDED FOR ANOTHER FIVE YEAR PHASE**

The Mathematics & Statistics Department will be hosting the Louis Stokes Alliance for Minority Participation (LSAMP) program for another five year phase, with the SSU program receiving approximately \$40,000 per year for each of the five years. SSU LSAMP is directed by Sam Brannen, Mathematics & Statistics Department Chair.

## **NATIONAL SCIENCE FOUNDATION (NSF) AWARDS**

- Jon Fukuto, Chemistry, received a new NSF award for his proposal "Chemical Biology of Hydrogen Sulfide." The award is for \$300,000 over three years.
- The National Science Foundation's Division of Computing and Communication Foundations funded \$5,000 for student travel to the 2012 IEEE International Symposium on Performance Analysis of Systems Software (Suzanne Rivoire, Computer Science, PI).

## **CSU COAST AWARDS**

The CSU Council on Ocean Affairs, Science and Technology (COAST) awarded funding to several SSU students:

- Three \$500 travel awards were given to support Biology graduate students.
- Three \$2500 internships were awarded to support students during the 2012 summer: two at Bodega Marine Laboratory with a leading California Department of Fish and Game abalone researcher, and one at PRBO Conservation Science.
- Biology student Colin Donlevy was awarded a \$1,500 COAST Undergraduate Student Award for Marine Science Research.

#### **NATIONAL INSTITUTES OF HEALTH (NIH) AWARD**

Jon Fukuto has received a \$356,987 grant from the Department of Health and Human Services for his project titled "BioChem & Pharmacology of HNO." The project will run 2012-2015.

#### **PROJECT LEAD**

Ben Ford and Brigitte Lahme, Mathematics & Statistics, and Katherine Morris, Education, received a North Bay Math Project grant for \$200,000 over 2011-13. All three received an additional \$250,000 each in Project Lead funding over 2011-13.

#### **RSCAP SUMMER 2012 FELLOWSHIPS**

The SSU Library funded Research, Scholarship and Creative Activity Program (RSCAP) awarded summer fellowships to two SST faculty:

- Jennifer Lillig, Chemistry, for her project "Structural Characterization of a Protein by NMR."
- Joseph Lin, Biology, for his project "Manuscript Preparation on Biological Hysteresis."

#### **FAMILY NURSE PRACTITIONER (FNP) PROGRAM FUNDING**

Wendy Smith received \$169,959 in Song-Brown Funding for 2012-13 to support the FNP program. In addition, the FNP Residency Program was awarded a grant for \$34,261 from the Santa Rosa Community Health Centers.

#### **WATERS COLLABORATIVE FUNDED BY THE COUNTY OF SONOMA**

Claudia Luke has been awarded \$48,157.00 by the County of Sonoma for her WATERS (Watershed Academics to Enhance Regional Sustainability) Collaborative. WATERS is a collaboration between SSU and the Sonoma County Water Agency (SCWA) with the primary goals of: creating a trained and local workforce of SSU graduates with knowledge, expertise and interest in water management issues; increasing and broadening SSU students, faculty, and staff contributions to SCWA projects and programs; enhancing public awareness and understanding of water management issues; and establishing an administrative structure and SSU-SCWA partnership that can effectively and flexibly meet the goals of the collaboration. The pilot project of the collaborative will center on water management issues of the Copeland Creek Watershed.

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## SHIP 2012

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Over the summer, thirteen of Sonoma County's top high school science students and seven volunteers participated in the School of Science and Technology's fifth annual Summer High School Internship Program (SHIP). SHIP is a partnership between the School of Science and Technology and the Sonoma County Office of Education, with additional funding provided by Dr. Lynn Cominsky and NASA E/PO.

The selected students participated in research projects alongside SST faculty mentors from the departments of Biology, Chemistry, Computer Science, Engineering Science, Kinesiology, Mathematics & Statistics, and Physics & Astronomy. Waleed Atallah, who worked with Dr. Ali Kujoory of the Engineering Science Department, was invited to speak about his project on solar-to-electrical energy system design at the Sonoma County Fair.

On September 10, the students presented their research results at a symposium held at SSU.



2012 SHIP interns and volunteers at the Fall 2012 SHIP Symposium. *Photo courtesy of Roger Mamer.*

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## KINESIOLOGY & NURSING STUDENTS PROMOTE HEALTHY EATING AND ACTIVE LIVING

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For the third semester, Kinesiology and Nursing majors are addressing community needs by promoting health and carrying out interventions in the Healthy Eating Active Living Community Health Initiative (HEAL) program. Obesity is rising in California, and sadly, higher percentages of overweight elementary children from lower income and minority communities are among the top health concerns for Sonoma County.

SST students are developing skills to be able to provide evidence-based classroom and playground activities for three Santa Rosa schools, finding meaning and inspiration in their student role as mentors for elementary students in developing positive eating and activity behaviors. The HEAL project is a collaboration among several organizations, including the Northern California Center for Well-Being, YMCA, Sonoma County Health Department, as well as the Kinesiology and Nursing Departments. The goal is to promote healthy eating and physical activity in the school communities of south Santa Rosa. HEAL is a three year (2011-2013), Kaiser-funded project administered by the Sonoma County Department of Health Services.

## ATTENTION ALL CS ALUMNI!

A reunion is being planned. Although the date and program have not been finalized, the reunion will likely be held in late April or early May 2013. All graduating classes from 1973 to 2012 are welcome to attend.

Please help us spread the word.

George Ledin is spearheading the reunion. If you are a SSU CS graduate and would like to receive more information about the forthcoming reunion, please contact him via email:

[ledin@sonoma.edu](mailto:ledin@sonoma.edu).

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## PI MU EPSILON HOSTS REGIONAL MATHEMATICS CONFERENCE

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Sonoma State's Pi Mu Epsilon chapter hosted a day-long regional math conference this September, the theme of which was "Applications of Mathematics." It was designed to inspire interest in students from all majors who appreciate the role math plays in a wide array of disciplines.

The applications of mathematics in different fields of study were highlighted by some of SSU and SST's own: Dr. Bala Ravikumar, of both the Engineering and Computer Science Departments, gave a talk on randomness as a resource for problem solving; Jeff Reich, an SSU alumnus with a master's degree in mathematics, presented a talk on quantum mechanics; Rachel Bayless, a math major, presented on her operations research; and Michael Harris, Pi Mu Epsilon Treasurer and computer science major, presented on the application of artificial intelligence in lung cancer diagnosis.

As this was a regional conference, students from over thirty Bay Area institutions were invited to attend, including UC and CSU campuses, private universities, and community colleges. The event included information on graduate schools in the area, and students got to know their peers while enjoying free pizza provided by Pi Mu Epsilon.

This conference embodied one of SST's main goals: to inspire interest in and educate students about STEM disciplines and careers. Robin Decker, Pi Mu Epsilon President, said that a conference such as this "creates a sense of community among students and faculty in the fields of science, technology, engineering and math, which encourages students to pursue STEM majors and eventually STEM careers."

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## COMPUTER SCIENCE GRADUATE EARNS PRESTIGIOUS AWARD FROM MICROSOFT

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Kent Carstens, who graduated with a bachelor's degree in computer science from Sonoma State University in 2008, was named a Most Valuable Professional (MVP) by Microsoft this past April. Kent received the award for his work on the Dynamics AX application for Microsoft's Dynamics AX 2009 ERP systems. MVP awards are given by Microsoft to acknowledge exceptional, independent community members who share their expertise and knowledge with others and are committed to make the most of Microsoft technology.

## SSU NURSING CLUB



The Nursing Club of Sonoma State University, an organization of students earning a bachelor's degree in nursing, engages in a number of community volunteer activities during the spring and fall academic semesters. Their enthusiasm and breadth of interest are mighty.

In February they spearheaded a drive among nursing faculty and students to collect a wide range of supplies for the National Association on Mental Illness (NAMI) Sonoma County including bus passes, nonperishable food, toiletries, and socks. Over the years, SSU nursing students have formed connections with NAMI through attending seminars, meetings, and having members come for in-class presentations.

Three groups of students volunteered at Catholic Charities, preparing snacks for forty children and dinner for approximately 100 people at the Family Support Center in March. They also helped bag produce at the Empire Redwood Food Bank for distribution throughout Sonoma County.

The club also worked with youth and families while participating in SSU's Expanding Your Horizons and Seawolf Decision Day, both of which took place on the same day in April.

As noted on the club's webpage: "We have a great time putting our books and stethoscopes down and serving the community in a new way!"

## WILLIAM LOWELL PUTNAM COMPETITION

The William Lowell Putnam Competition will be held on Saturday, December 1. The deadline to sign up is Monday, October 8. The exam is from 8:00 to 11:00 am and 1:00 to 4:00 pm with lunch provided by the department. Also, cash prizes will be awarded to those who do well, and a free stenciled t-shirt will be given to all participants—awarded at our Awards Banquet during Math Awareness Week in April.



## TEST YOUR KNOWLEDGE

In the last newsletter, you were asked what came next in this sequence of special numbers:

3, 7, 31, 127, \_\_\_\_.

And the answer is: **8191**.

These numbers are known as Mersenne primes. A Mersenne prime is a prime number that is one less than a power of two ( $2^n - 1$ ) where the exponent ( $n$ ) is also prime.

## ROCKET AND BALLOON LAUNCHES

In May each year, the Santa Cruz Institute for Particle Physics (SCIPP) and NASA fund the Balloon Fest: a one day event where students launch scientific experiments on high altitude balloons which are tethered, capping them at 1000 ft. altitude. This year, 81 students participated, including Kevin Zack from SSU who ran a preliminary test of his prototype payload experiment that will be used in SSU's NASA E/PO group's Small Satellites for Secondary Students (S4) program. E/PO staffer Logan Hill also participated in the event and helped with the judging and coordination of the student teams.



Logan Hill (front, right) holds the SSU balloon prior to the tethered launch.

Further payload tests occurred on the Black Rock (Nevada) playa in September, where Kevin Zack, E/PO staff member Kevin John, and Prof. Lynn Cominsky broadcast their first internet program using the Virtual Classroom. They were

able to achieve GPS lock, read out data from temperature and pressure sensors, and maintain WiFi connectivity on rocket launches to 3000 feet above ground level. To view the videos shown in the broadcast and learn more about the S4 project, see: [epo.sonoma.edu/cansat](http://epo.sonoma.edu/cansat) (and look at the link to the ARLISS 2012 Payload Communications Tests).

Kevin Zack's Level 2 rocket "Endeavor" successfully blasts off from the Black Rock playa.



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## NATIONAL HEIRLOOM EXPO

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Sonoma State University was represented at the recent three-day National Heirloom Expo with our new World of Water exhibit, which featured an interactive “walk through a watershed.” Copeland Creek served as our model, and our twenty feet of space was packed with microscopes to look through, live insects to hold, soil organisms to explore, and a tasty Asian pear to enjoy at the end. Several children were overheard declaring our SSU exhibit “the best thing at the whole fair!” We were able to share our watershed related university activities with a wide audience interested in learning more about Water Works; our new School of Science and Technology FYE (Freshman Year Experience) course, “Sustainability in My World”; the WATERS collaborative; the SSU Preserves; and the ENSP Garden Classroom. Over 20,000 people from across the nation and around the world attended the fair.

Presented by the Preserves’ Entomology Outreach program and the ENSP Department’s Garden Classroom program, our collaborative exhibit benefitted from the contributions of many campus student groups. Students from the Biology Club, Friends of Copeland Creek, SSU Slow Food, and Compost Happens! assisted in creating exhibits and staffing the event.

Several Biology Department alumni also volunteered their time to help with festival staffing. JUMP service club, the Children’s School, and SSU Facilities and Dining Services all contribute to the success of these programs. The programs and exhibit also benefit from the support of the Center for Community Engagement and Center for Sustainable Communities. Student participation in our new exhibit is supported by IRA grants to the Entomology Outreach Program, the Biology Department Museum, and the ENSP Garden Classroom. We also enjoy support from many business and community partners.

Of course, we had a lot of ideas for improvements! Check out our next appearance at the Bay Area Science Festival ([www.bayareascience.org/festival](http://www.bayareascience.org/festival)), held on October 27, 2012 at the Santa Rosa Fairgrounds. This spring, we plan to bring our exhibit to campus as part of Water Works. Information about our appearances can be found on the Field Stations & Nature Preserves website calendar. Sign up for our newsletter to receive updates on our activities.



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## FOURTY-FOUR WESTERN POND TURTLES RELEASED INTO THE WILD

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Five years ago, Dr. Nick Geist and his lab of grad students began a collaborative project rearing western pond turtles with zoo keepers at the San Francisco and Oakland zoos. Once abundant along most of the western coast of the North American continent, the western pond turtle’s numbers have steeply declined over the last few decades. They are now recognized as vulnerable by the International Union for the Conservation of nature.

For the majority of the study, eggs that were carefully collected in the field were incubated, hatched, and reared by herpetologists at the zoos. This year, however, the eggs were incubated in the field, which allowed for the collection of data on environmental conditions that could affect the hatchlings—specifically their gender. These hatchlings were then brought back to the zoos to be hand reared by zoo keepers trained in herpetology. By raising hatchlings in captivity, the young turtles are able to grow faster, which in turn allows for the selection of larger juveniles to be released into the wild. A larger size is a deterrent for predators, therefore increasing the survival rate of the young turtles.

This August, forty-four of the western pond turtles raised in this collaborative “headstart” program were released into the wild. The event was featured on [National Geographic’s “News Watch” page](#) and [SF Gate](#).

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## GEOLOGISTS MARK TEN YEARS OF CANADA TRIPS

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In 2003, SSU geology professor Matt James decided to organize a field trip to the UNESCO World Heritage Site of the Burgess Shale fossil deposits in British Columbia, Canada. And the field trip Professor James recently undertook in September 2012 marks ten years of field trips with SSU geology and earth science majors up north. The significance of this fossil site was well-known to the late Harvard University paleontologist Stephen Jay Gould. "Without hesitation or ambiguity," Gould wrote in his 1989 book, *Wonderful Life*, the Burgess Shale fossil deposits are "the world's most important animal fossils." Professor James wanted to bring his students to see the fossils for themselves, and generations of students have benefitted.



Professors Matt James and Tom Anderson with SSU geology and earth science majors at the Walcott Quarry in Yoho National Park on the 2012 Burgess Shale trip.

Matt James has taken small groups of his advanced paleontology students up to Canada each year for 10 years, usually accompanied by now-emeritus professor of geology Tom Anderson. The geology professors and their students fly from San Francisco to Calgary in Alberta, and then drive to the tiny town of Field on the far eastern edge of British Columbia. During the trip, faculty and students take a five-hour interpretive hike in a mountaineering environment on the Athabasca Glacier in Jasper National Park. The main fossil hikes are high in the Canadian Rockies, close to the original fossil discovery site where Charles Doolittle Walcott of the Smithsonian Institution discovered the Burgess Shale fossils in 1909. Another hike goes up Mount Stephen to the Mount Stephen Trilobite Beds, overlooking the Kicking Horse River and the Trans-Canada Highway.

In 2009, Professor James was invited by the Burgess Shale Geoscience Foundation to organize a series of hikes to the fossil sites for geology and paleontology faculty members from across the United States to celebrate the centennial of Walcott's discovery. The SSU geology and earth science majors also accompany Professors James and Anderson to see fossils and glaciers high above Lake Louise in Banff National Park, where they visit the Plain of Six Glaciers tea hut. A final day in Canada for the SSU travelers involves a behind-the-scenes tour of the vast fossil collections of the Royal Tyrrell Museum of Palaeontology in Drumheller, Alberta.

Students and faculty fly back to San Francisco after six days—having seen and experienced firsthand some of the most spectacular geology, paleontology, glaciers, and scenery to be found anywhere in the world. Professor James strongly believes in the importance of active field learning for undergraduates with hands-on, boots-on-the-ground experience in the national parks of Canada and the United States. After returning to campus, the SSU undergraduate students work with Professor James during the fall semester on projects involving the fossils and their reconstruction controversies, the vast scientific literature on these Cambrian fossils dating from 505 million years ago, and the role these fossils play in interpreting life on planet Earth.

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## COLLABORATIVE CLASSROOM PROJECT IS UNDERWAY

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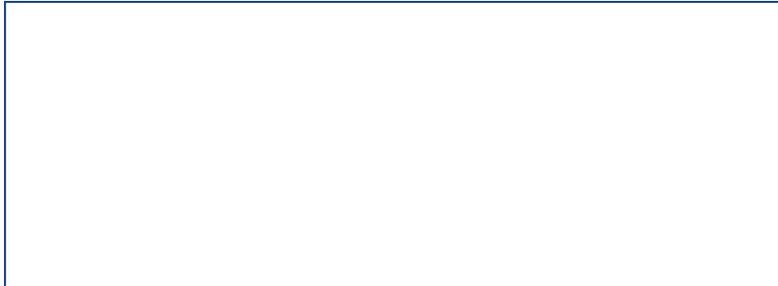
PE 33 before.

Last semester, SST faculty submitted a proposal for renovation of a classroom in the Physical Education building, PE 33, in response to a call by the Provost to create a space for innovative, collaborative teaching strategies. We were awarded the grant and construction took place this summer. The room was expanded to accommodate 30 students. Rolling chairs, fold up work tables, white boards on all walls, and new technology are all part of the plan. Thanks to Provost Rogerson and Jason Wenrick, along with the SST proposal committee for making this possible: Sam Brannen, Jenn Whiles Lillig, Ben Ford, and Rich Whitkus. We invite you to come and check out the new classroom!



PE 33 after.

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## AGILENT/BEST FUND ENGINEERING SCIENCE SCHOLARSHIPS

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Several students majoring in electrical engineering (EE) will be awarded scholarships for the 2012-2013 academic year thanks to the generous support of Agilent Technologies and in partnership with Santa Rosa's Chamber of Commerce's Building Economic Success Together (BEST) program and the Santa Rosa Junior College. Three freshmen EE majors will be awarded \$2000 scholarships and two SRJC transfer students entering the EE program at SSU will be awarded \$1000 scholarships. The recipients will be highly qualified students with stellar academic records. Recipients will also be paired with Agilent mentors in developing their understanding of the EE career and profession. This support will continue for the next five years.



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