

Sonoma State University

SCHOOL OF SCIENCE & TECHNOLOGY

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A Note from the Dean

Welcome to Spring 2013 in the School of Science and Technology!

I hope this finds you settling in to the New Year; it was a busy fall for the School of Science and Technology. This issue highlights the exciting news from our faculty, students and departments including Professor Lynn Cominsky's appointment as a fellow of the Association for the Advancement of Science and Dr. Jean Bee Chan's recognition from the Mathematical Association of America.

The spring semester got off to a bit of a rough start when floodwaters caused the closure of the Darwin basement the day before classes were to begin. Thanks to our extraordinary staff and faculty, we were able to move over 100 classes to temporary instructional spaces, thus minimizing the impact to students. Repairs are completed and we are back and fully operational.

On another note, the CSU system welcomed a new Chancellor, Dr. Tim White, this past December. Dr. White oversees the twenty-three CSU campuses and works closely with the CSU Trustees and the California legislative leadership on issues related to higher education. The passing of Proposition 30 in November was a great relief to the CSU as it allowed us to move ahead without an additional \$250 million funding cut. We are still working to adjust to the harsh realities of the previous \$750 million cut and are doing our best to make positive changes that allow us to better serve our students and provide well-educated graduates to our community.

Our School of Science and Technology is hosting two notably large and exciting events this spring. The Sonoma County Science Fair was held at Sonoma State University for the first time on February 22 and 23. We are honored to be able to host over 100 of Sonoma County's best and brightest young scientists and their families on our campus for this event. On Saturday, April 13, we will be hosting prospective SSU students and community members as part of the SST Science Festival and SSU Seawolf Decision Day. We hope you will come by and check out the "Walk in the Watershed" exhibits as you explore the SST departments and learn about their connections to water – which is becoming ever more precious as human demands increase and management becomes more challenging. Learn more at www.sonoma.edu/scitech/festival.

Weill Hall in the Green Music Center continues to impress the campus and our supportive community with a variety of lectures and performances. I hope that you've been able to enjoy the Hall; Yo-Yo Ma highlighted the playbill earlier this year along with the Santa Rosa and San Francisco Symphonies (go to gmc.sonoma.edu for information). Wynton Marsalis and the Jazz at Lincoln Center band wowed the crowd this month.

In order to improve our alignment of curriculum and skill building to better address current workforce demands, our campus is seeking ways to respond to employers' needs. As part of this effort, we are developing several new skill-focused certificate programs through our School of Extended Education. Our Computer Science Department is designing a certificate program for mobile computer applications and Nursing is considering additional post-licensure programs in partnership with local healthcare organizations. We believe these programs will serve to better prepare our students and others seeking to advance their careers.

We continue to be deeply grateful to our friends and donors, more so now than ever. Many of you have helped our students through internships and research assistantship programs. Other supporters who donate to our programs make it possible to enhance our laboratories and continue to offer our outstanding public lecture series.

I wish the best to all of you and am excited for a wonderful spring semester!

Lynn Stauffer
Dean, School of Science & Technology

BEN FORD RECEIVES GOLDSTEIN AWARD

Dr. Ben Ford, professor of Mathematics, was one of two recipients of the 2012-2013 Bernie and Estelle Goldstein Award. This program serves to recognize Sonoma State faculty members who exemplify the teacher-scholar model in their professional development. Winners of this award demonstrate a strong commitment to incorporating their scholarship into their teaching and their teaching into their scholarship. They encourage their students to be active researchers and scholars, which in turn promotes student development and achievement. Now in its fourth year, the program provides the recipients of the award with funds to support and further their research.

Dr. Ben Ford



Dr. Ford's primary research centers on the representation theory of groups, with particular emphasis on the modular representation theory of algebraic and finite symmetric groups. He has a breadth of interest in mathematics, however, and has spoken widely on a variety of topics pertaining to his field. He is well published and an active member of both the SSU and broader community. He was the 2011-2012 Chair of the SSU Faculty, and was also recognized as a National Science Foundation Postdoctoral Fellow from 1996-1998.

As a colleague stated in article on [SSU's Workplace](#), "Ben makes the whole mathematics community stronger. He leads by making other leaders as well."

JEAN BEE CHAN WINS MAA AWARD



MAA President Dr. Paul Zorn, Peter Stanek, and Jean Bee Chan (L-R).

Jean Bee Chan and her husband, Peter Stanek, have jointly won the Mathematical Association of America's Certificate of Meritorious Service for the Golden Section (the

"Golden Section" is the name of the Northern California section of the MAA). The Certificate of Meritorious Service is awarded to individuals of a section who have made significant contributions to the Association at the section and national level. Jean and her husband were presented with the award at the 2013 Joint Mathematics Meetings Prize Session on Thursday, January 10, in San Diego, CA.



Jean and fellow conference attendees, including Edie Mendez, Ben Ford, and Brigitte Lahme.

LYNN COMINSKY HONORED BY TWO SCIENTIFIC SOCIETIES



Dr. Lynn Cominsky

Professor Lynn Cominsky, Chair of the Department of Physics & Astronomy, was recently honored by two different scientific societies. In September 2012, she was named the "Woman Physicist

of the Month" by the Committee on the Status of Women in Physics of the American Physical Society (APS). A profile of Cominsky is featured on the [APS website](#). Cominsky just finished her term as chair of the APS California-Nevada section of the society at the end of the 2012 calendar year and was previously named a Fellow of the APS in 2009.

In November 2012, the American Association for the Advancement of Science (AAAS) notified Cominsky that she was chosen to be an 2013 AAAS Fellow, having been nominated by the Astronomy section "for her work in outreach for X-ray and gamma-ray astronomy (NuSTAR, Fermi, XMM, Swift) and for her inspiration to her undergraduate students at Sonoma State." AAAS Fellows are elected each year whose "efforts on behalf of the advancement of science or its applications are scientifically or socially distinguished."

SSU PHYSICS STUDENTS ATTEND CUWIP

Three SSU physics students, Anna Wojtowicz, Aman Gill, and Katie Badham, had the privilege of attending the Eighth Annual Conference for Undergraduate Women in Physics (CUWIP). The conference, which took place January 18 to 20 at the California Institute of Technology (Caltech) in Pasadena and was one of six conferences being held simultaneously at different institutions across the nation, was attended by over 200 undergraduate women.



SSU Physics Majors Katie Badham, Aman Gill, Anna Wojtowicz (L-R).

Conference participants were welcomed by Caltech President, Jean-Lou Chameau, and attended a variety of talks, lab tours, and graduate school panels. Undergraduate students

also presented posters on their research and gave talks explaining their area of research. SST's very own Anna Wojtowicz presented a poster on her research, titled "High-Temperature Induced Changes of Electronic Properties in (BEDT-TTF)₂ Organic Conductors." The conference wrapped up with a visit to the Jet Propulsion Laboratory (JPL), where the attendees viewed a presentation about Cassini's mission to Saturn and a video about the exploration of our solar system with Voyager 1 and 2, and inspected a moon rock from Apollo 16 and robotic replicas of Galileo and Voyager.

Katie Badham says of the experience:

"It made us feel confident and comforted to be surrounded by many other women who take interest in the same studies we do. One of the main takeaways I got from this conference is that as physicists, we are smarter as a group than as individuals and it is important to interact with others, both men and women, in order to gain creativity. CUWIP provided imperative information that we will hold dear to us for a very long time. We are more aware that it is extremely vital to choose a career path that you know you are passionate about and will enjoy doing throughout future endeavors."

MESA STUDENT LEADERSHIP CONFERENCE

Three Sonoma State MESA students were handpicked to attend the Mathematics, Engineering, Science Achievement (MESA) Student Leadership Conference this past October. Engineering students Chio Saephan and Maram Salameh, and statistics student Kelsi Espinoza refined their already strong leadership skills through direct interaction with industry mentors and speakers. They participated in mock interviews, presented business solutions to a panel of industry leaders, connected with representatives from seven national and California companies, and heard guest speakers. One of the guest speakers was former NASA astronaut Tammy Jernigan, who led a women in STEM panel discussion. Visit [MESA's website](#) for more information on the program.



Chio Saephan, Maram Salameh,
Bill Harper of PG&E, Dr. Izabela
Kanaana, and Kelsi Espinoza (L-
R)

FARID FARAHMAND'S FULBRIGHT FELLOWSHIP

This semester, Dr. Farid Farahmand is on a Fulbright Fellowship teaching at a university in Cape Coast, Ghana, as a visiting professor.



Dr. Farid Farahmand

In addition, Farid hopes to establish connections with the three large universities in Ghana along with at least three other large universities in other countries. The purpose of the Fulbright program is to encourage open communication and long-term cooperative relationships, and to enrich the educational, political, economic, social and cultural lives of countries around the world.

In January, Farid emailed some of his first impressions of life in Ghana:

“We arrived at Accra, Ghana, last week and after a full day of orientation at the embassy we left Accra for Cape Coast. We have been in Cape Coast for 7 days now. The University has given us a very spacious bungalow on campus. The campus is large and ‘houses’ 25 thousand faculty and students. Another 10,000 commute. The weather is very hot, humid, and hazy here. At

night we have to choose between very noisy fans or the noise outside...It gets a little cooler about 3 am...and right before we get some sleep the roosters and birds start their asynchronous operas. We are getting used to all these! Yesterday, the plumbers fixed the shower and at night we don't have to use buckets anymore. In the morning, however, buckets are the only way to take a shower as the water flow is extremely low. In general, the water is very intermittent and slightly changes its color; internet is consistently slow (soon we realized Google is no longer the show runner). We don't have any hot water and we have to get used to it. One big challenge now is how to wash our clothes! They have told us we need to get 4 more large buckets and a washing board; so we are going to the market tomorrow to see what we can find. We are only 30 minutes walking distance away from the ocean. There is a nice restaurant by the ocean that is very enjoyable. Sometimes when we are sitting next to the ocean the breeze feels extremely relaxing.

Walking in the streets is amazing.....perhaps the best way to describe it is to say it is full of diversity and coexistence; a bizarre harmony of cars, adults, kids, babies, dogs, roosters, bikes, lambs, lizards, etc., all moving together—in the same street you see lines of people going to evening prayer in the mosque while there are two other churches; there is really no concept of sidewalk in a crowded downtown. People are very nice here and kids call us ‘broonies’—white people—and wave for us. When we wave back at the kids they come to us and ask for our names.

I have an office and a lab now. Both have air-conditioning, which is nice. I have had a few encounters with students and they all seem to be hungry to learn. I will give a seminar on Friday and the classes will officially start on Monday.

Overall, in spite of all the challenges, our stay in Ghana so far has been extremely interesting, exciting, joyful, and educational; who knows, perhaps all of these help us in basic character building. Maybe we are just too new, but you get the feeling there is so much opportunity to do something useful...”

MICHAEL COHEN AND CITY OF SANTA ROSA WASTEWATER COLLABORATION

In the February 2013 issue of the *Journal of Environmental Science and Health*, Michael Cohen's research group in the Department of Biology has published the results of its five-year collaboration with the City of Santa Rosa on the development of an integrated system for wastewater treatment and bioenergy production. The article, entitled “Wastewater polishing by a channelized macrophyte-dominated wetland and anaerobic digestion of the harvested phytomass,” describes the use of native plants and algae to remove residual pollutants, including estrogens and nitrate, from treated wastewater and production of methane from harvested wetland vegetation. Article co-authors include former Department of Biology M.S. graduate students Caden Hare and John Kozlowski, and undergraduate student researchers Linden Schneider, Meghan Parish and Zane Knight, as well as collaborators from San Francisco State University, Seattle Pacific University and USDA Agricultural Research Service. In addition to the co-authors, several Sonoma State faculty (Karina Nielsen and Dan Crocker), School of Science and Technology staff (John Collins, Stephanie Thibault and Nels Warden) and other student researchers made valuable contributions to the project. The full text of the article can be accessed [here](#).

S3: STEPPING UP STEM AT SSU—UNDERGRADUATE RESEARCHERS

Power-Consumption Characteristics of Supercomputing Applications, by Jacob Combs

In the past, supercomputing research focused solely on performance, but because of the escalating power requirements of these large-scale computing systems, understanding their power consumption has become an important research goal. Funded by the S³ grant, I worked over the summer alongside two computer



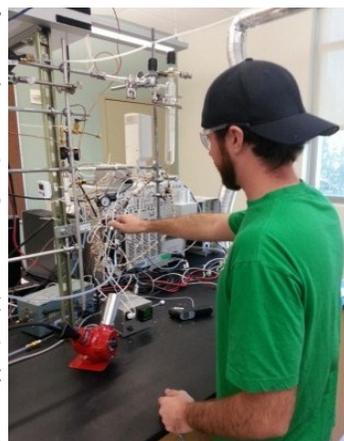
Dr. Chung-Hsing Hsu (ORNL), Prof. Suzanne Rivoire, Matt Hardwick, David Tran, and Jacob Combs (L-R) at the National Center for Computational Science at Oak Ridge, TN.

science students with Dr. Suzanne Rivoire, researching the power-consumption characteristics of supercomputing applications. As part of this team, my primary goal was to develop a method of identifying and

characterizing the "power signatures" of various applications based on their power traces (measured power consumption over time). We collected most of our power data from machines at SSU. We began analyzing the data by developing methods of compressing these traces, and we evaluated our compression techniques in terms of a tradeoff between simplicity and accuracy. Then, given each application's compressed power traces, we developed methods of unifying them into a single power signature.

Tropospheric Measurements of Local Air Pollutants, by Ross Mohs

The purpose of my research was to collect, characterize, and quantify pollutants in Sonoma County. This is done through analysis with Gas Chromatography/Mass Spectrometry. I pull a vacuum past an absorbent tube which catches Volatile Organic Compounds (VOCs), otherwise known as pollutants. This tube is then heat purged and the VOCs are trapped on a cryogenic trap before injection for GC/MS analysis. This summer I developed a good GC/MS method for this analysis, many usable chromatograms which allow for characterization, and have started to run calibration curves for quantization. My next steps are to complete the quantization and characterize more compounds.



Ross Mohs analyzes local atmospheric data in Prof. Mark Perri's lab at SSU (top & bottom).

CS ALUM INDUCTED INTO THE SSU ATHLETICS HALL OF FAME

Computer Science alum Vince Inglima has been inducted into the SSU Athletics Hall of Fame. He's the lone All-American in SSU's men's basketball history, and was named the NCAA Division II Championship Tournament's player of the year, the CCAA's Male Student-Athlete of the Year, a Division II Bulletin All-American, and an Academic All-District performer. He was also invited to participate in the NCAA Division II All-Star game at the Naismith Basketball Hall of Fame in Springfield, MA, and he played professionally for several years in Australia. He holds SSU's record for career 3-point percentage (44.6) and is second in free throw percentage (82.5). Vince is currently the Assistant Basketball Coach at CSU Monterey Bay.

SUZANNE RIVOIRE TO SERVE ON TWO PROGRAM COMMITTEES

Computer science faculty member Suzanne Rivoire has been invited to serve on the program committees of two international computer science conferences: the 9th Workshop on High-Performance, Power-Aware Computing (to be held in Boston in May 2013), and the 6th International Systems and Storage Conference (to be held in Israel in June/July 2013).

MARSH WHITE GRANT AWARDED TO SONOMA STATE SOCIETY OF PHYSICS STUDENTS

From: SSU Society of Physics Students

It is often easy for elementary school teachers to forget the importance of science under the pressures of statewide-standardized examinations (such as STAR testing) which focus exclusively on mathematics and reading skills. The Society of Physics Students (SPS) chapter members of Sonoma State University (SSU) have become aware of the plight of science in the local elementary schools and believe it is important for elementary students to be exposed to the sciences. SPS members have therefore developed a small lesson plan for a fourth grade class in the local area that involves an interactive, experiential presentation of electricity and magnetism.

This demonstration, to be conducted in elementary school classrooms, will show some of the many applications of science in our world such as how electric motors work and why green energy is important. They will carry out this lesson by assisting the students in building simple electric motors, showing new and interesting demos of electricity and magnetism, and providing materials for the students to take home with them to further their understanding at home. In addition to the simple electric motor and displays already made, the SPS of SSU will build a superconducting levitation demonstration consisting of a superconductor, liquid nitrogen and a magnetic track. It will be built in the hopes of showing the fourth grade students a fun and weird side of science.

To help carry out all of these tasks, SPS commissioned a small committee to create a proposal for the SPS national Marsh White Grants: an award given out to SPS chapters with the best proposals on how to incorporate physics into the public education system. SPS of SSU is proud to accept this award and will be taking the sciences to elementary students soon to help inspire a new generation of scientists. This award was first given in 1975, and is named in honor of one of the most influential founders of Sigma Pi Sigma, Dr. March W. White. Sixteen (16) outstanding projects are supported this year.

BIOLOGY GRADUATE STUDENTS RECEIVE COAST AWARDS

Jeffrey Sharick and Derek Somo, two graduate students from Professor Dan Crocker's lab, were awarded the highly competitive COAST (CSU Council on Ocean Affairs, Science and Technology) 2012-2013 Student Award for Marine Science Research. Their projects, "Oxidative stress: a potential cost of breeding in adult male and female northern elephant seals," (Sharick) and "Plasticity in rate of development of dive capacity in northern elephant seals: effects of variation in body reserves and behavior," (Somo) were 2 of the 25 projects funded. In all, 98 applications were received.

[COAST](#), established in 2008, integrates system-wide resources to promote interdisciplinary collaborations across California campuses to advance understanding and promote awareness of California's natural coastal and marine resources in addition to the processes that affect it.

AGILENT-BEST SCHOLARSHIP FOR STUDENT RESEARCH

Agilent-BEST Scholarships will be awarded to Engineering majors and minors to support student research this summer. The Agilent-BEST Scholarship program is made possible by a partnership between Agilent Technologies, the Santa Rosa Chamber of Commerce's Building Economic Success Together (BEST) job creation initiative, Santa Rosa Junior College (SRJC) and Sonoma State University (SSU). The goal is to encourage students to pursue a degree in electrical engineering (EE) and add to the technical workforce in Sonoma County—strengthening the region's competitiveness in the global economy. A total of \$6,000 is awarded to three students for the 2012-13 academic year, providing opportunities for students to work on research projects with their faculty mentor and Agilent engineers for six weeks during the summer. Each recipient of the scholarship is honored as an "Agilent Scholar."

GREEN MUSIC CENTER ACADEMIC INTEGRATION FUNDING

\$100,000 that has been generated by GMC ticket sales and donor funds has been allocated for 2013 to fund projects that will develop and showcase interaction between academic programs and the Green Music Center. The aim is to utilize the GMC in innovative ways—not just as a lecture theatre. [Three projects from SST faculty were chosen to receive funding.](#)

Proposers: Dr. Jack Ou and Dr. Farid Farahmand, Engineering Science

Title: Music, the Digital Way

Summary: Digital signal processing (DSP) is widely used in everyday life. Yet many students are afraid of learning DSP because they are afraid of math. With this proposal, we seek funding to develop two sets of hands-on activities that will enhance students' understanding of Digital Signal Processing through music and concert hall acoustics.

Proposers: Ms. Kristen Daley and Mr. Tony Bish, Theatre Arts, Dr. Jack Ou and Dr. Farid Farahmand, Engineering Science

Title: Preserves Soundscape Project

Summary: The Preserve Soundscape Project engages biology, engineering, and performing arts students and faculty to interpret soundscapes of the SSU's Preserves through performances in the world-class acoustic environments of the Green Music Center. This project brings together students and faculty from across disciplines to explore technical, biological and artistic interpretation of this theme. Objectives are to: create an inter-disciplinary cross-course project that engages SSU students and faculty with world-class acoustics of Weill Hall, showcase the SSU Preserves and increase awareness and understanding of natural soundscapes, and teach students, K-12 and community members about changing soundscapes in Sonoma County.

Proposers: Dr. Brigitte Lahme, Mathematics, and Dr. Jeremy Qualls, Physics & Astronomy

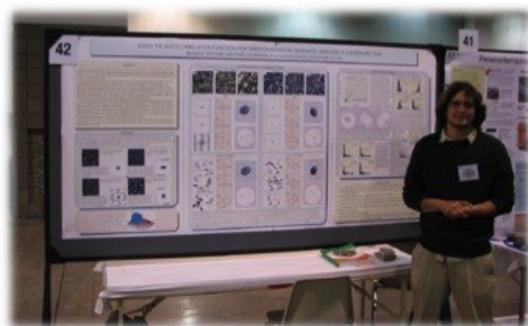
Title: Academic Integration STEM Symposium

Summary: This proposal seeks to host a transformative experience for SSU students in the form of a culminating symposium to highlight SSU's commitment to STEM education and the successful Waterworks cross-campus theme. The symposium also includes projects with the Waters collaborative, an organization formed between the Sonoma Water Agency and the campus and supported financially by the Sonoma Water Agency. In true conference style, this symposium will have 1) a motivational keynote speaker, 2) lobby poster sessions and exhibits, and 3) oral presentations by freshmen (STEM-FYE, Science 121). Hosting the event at the GMC would allow the inclusion of student groups who are currently working on research projects in STEM areas, part of the WATERS collaborative, and WaterWorks (which includes many academic programs including anthropology, art, dance, and theater).

SONG-BROWN FUNDING

Wendy Smith, Director of the Nursing Department's Family Nurse Practitioner Program, has been awarded \$170,000 in funding by the state of California's Office of Statewide Health Planning and Development's Song-Brown Program. [The Song-Brown Program](#) "encourages universities and primary care health professionals to provide healthcare in medically underserved areas, and provides financial support to family practice residency, nurse practitioner, physician assistant, and registered nurse (RN) education programs throughout California."

SSU SCIENCE SYMPOSIUM



The School of Science and Technology is hosting the [SSU Science Symposium](#) on May 7, 2013, 4-8 pm. The Symposium features talks by Science 121 students, a buffet and reception with comments by our Dean, Provost, and President, and a poster session showcasing the scholarship and achievements of students in the School of Science and Technology. Collaborations across disciplines and with community partners as part of the WATERS Collaborative will also be highlighted. Scientist and author [Ransom Stephens](#) will deliver the keynote talk, "Your Pursuit of Greatness in a Technical World." Students can apply to participate in the poster presentation by completing the [Student Registration Form](#).

SONOMA STATE'S NURSING CLUB

The Nursing Club of Sonoma State University (NCSSU) continued their commitment to maintaining and improving the health of the community locally and nationally. Despite intense academic demands, these young women and men volunteered their time and talents to several non-profit organizations during the fall 2012 semester, including:

- Raising funds and donating toiletries for the National Alliance on Mental Illness (NAMI) to support recovery and independent community living for those with serious mental illnesses.
- Raising funds for and walking in the Leukemia & Lymphoma Society's Light the Night walk in Santa Rosa (see picture below).
- Raising \$300.00 from a Bake Sale for the Hurricane Sandy Relief Fund.
- Conducting a donations and coat drive for the Living Room, a daytime drop in center for women and children without homes.

In addition, within the SSU Nursing Department, the club maintains a mentor/mentee program where members of the seasoned nursing class pair with new members of the nursing program to assist with navigating their first year in the program. These efforts included a meet and greet mentor/mentee picnic to begin the academic year, mentor/mentee study sessions for one of their first exams, and providing holiday goody bags to wish them luck with their first set of comprehensive finals.



ES OPEN HOUSE

A group of 25 students and 2 of their teachers from Santa Rosa's Piner High School's Makers and Science classes visited the Department of Engineering Science on February 1, 2013. Their visit included a tour of the laboratories and a showcase of students' projects by the Engineering Club.

Here is a testimonial from one of the teachers (to Mr. Shahram Marivani, the event coordinator):

"Thank you so much for an excellent presentation and warm welcome for the teachers and students at Piner High. It was obvious the excitement the students show for your program and that the instructors feel the same way about teaching and getting to know the students. We were all very impressed with the projects and the family-feel of the department.

We look forward to continued collaboration with you and the other members as we lead our science department, and hopefully [our] school, to become a model STEM program."

IET PATW COMPETITION 2013

Dr. Haider Khaleel of the Engineering Science Department is organizing the Institution of Engineering and Technology's (IET) Present Around the World (PATW) competition to be held in Rohnert Park at SSU's campus this coming April. IET sponsors the PATW competition worldwide to encourage valuable contributions to the engineering discipline and recognize young and talented engineering students and professionals. This competition provides a supportive and informal environment in which students and young professionals network and develop their presentation skills. They also enable students and young professionals to learn about the latest advances within engineering and technology and to gain access to new ideas.

Individual competitors give a presentation for 10 minutes on a subject related to engineering and technology and answer questions for a further 5 minutes. Applicants must be between 18 and 26 years old but may come from all walks of engineering life: students, recent graduates, apprentices and young professionals. Students are encouraged to apply for a chance to win cash prizes, IET membership, plus a chance to qualify for the global final in London, UK (all expenses paid!).

I LEARNED IT AT THE CREEK

By Jeremy Qualls, Associate Professor of Physics



Have you heard about the new [Science 120/121 freshman year experience](#)? This year-long course combines biology, critical thinking, pre-calculus, and field experiences with community partners in a new, innovative way. It was designed by faculty across the School of Science and Technology to showcase what various STEM (Science, Technology, Education, and Mathematics) disciplines have to offer with Copeland Creek and our local watershed as the common theme. This class merges many GE units into one seamless experience and creates an ideal environment for GE Math and English ready students transitioning into college. It is also perfect for those trying to get a better feel for the sciences.

The 2012-2013 pioneer course of 48 students had a great Fall semester and is now moving into their student based projects. Our first field event working with community partners Dr. Claudia Luke, Director of SSU Preserves, and Becca Lawton, Research Director at Sonoma Ecology Center, was very successful.

The path to graduating with a university degree at SSU is challenging. More than a third of our freshman students leave within the first two years. The problem is compounded when we look at the final graduation rates for just STEM majors: less than one fourth of incoming SSU STEM majors graduate within 6 years within STEM. Statistics like this are very common throughout California. Apparently, this behavior is prevalent throughout the United States and as a nation our supply of scientists is decreasing. Many variables are at play here with some of the big contributors being underdeveloped Math and English skills, the transition from high school pedagogy, and finding the best fit in academic program.



The National Science Foundation, through its STEM Talent Expansion Program (STEP), funded “S³: STEPping up STEM at SSU.” This grant provides funds to develop the Science 120/121 courses, expand STEM advising, tutoring, and workshops, as well as provide



long term research opportunities for SSU students and faculty. The Principal Investigator for the grant is Dean Lynn Stauffer. Members of the team include: Jeremy Qualls and Lynn Cominsky (Physics and Astronomy); Nathan Rank and Karina Nielsen (Biology); Brigitte Lahme and Ben Ford (Mathematics and Statistics); John Sullins (Philosophy); Claudia Luke (Director of SSU’s Field Stations and Nature Preserves); and Julie Greathouse (Student Services). Additional SST personnel who helped in the development and teaching of the curriculum include: Suzanne Rivoire (Computer Science); Farid Farahmand (Engineering Science); Carmen Works (Chemistry); and Michael Smith (Geology).

The course is also associated with the Waterworks Lecture series and WATERS collaborative.

If you are faculty or staff and would like to teach in or be part of the SCI 120/121 experience, or you want to learn more about this wonderful project, please email Jeremy Qualls (quallsj@sonoma.edu) or Lynn Stauffer (lynn.stauffer@sonoma.edu).

ROLFE ERICKSON AND HIS HEALDSBURGITES

Rolfe Erickson, Emeritus Geology Professor, announced this January at the American Geophysical Union symposium that the rocks found in the asteroid field in Healdsburg’s Dry Creek Valley are not only 2.8 million years old, but they are indeed tektites—a rare rock that forms when a meteor almost a mile in width hits the Earth with enough force to melt its crust. Erickson and his co-authors (Stephen Norwick and Caitlyn Byrd of SSU, and Alan Deino of the Berkeley Geochronology Center) say these "healdsburgites" point to an asteroid impact whose exact size and location is yet to be determined, but could very well be the largest asteroid field in Western North America. For more detail on healdsburgites, visit the [AGU’s Fall Meeting website](#). Erickson and the healdsburgites are also featured on [SSU’s NewsCenter](#) and in [The Press Democrat](#).

SST AND SCOE BRING SCIENCE FAIR TO SSU



Science Fair participants play with CO₂ air bubbles at the Chemistry Club's workshop.

This February, the Sonoma County Office of Education (SCOE) partnered with the School of Science and Technology and the Synopsis Outreach Foundation to bring the Synopsis-Sonoma County Science Fair to Sonoma State University for the first time. Open to all Sonoma County students in grades 6 to 12, the Science Fair showcases research projects done in the areas of agricultural science, behavioral science, biology, chemistry, Earth science, environmental science, health and physics.

There were a record number of schools, students and participants in this year's fair with 62 judges evaluating 100 projects. Judges included SST's very own Dr. Lynn Stauffer, Dean; Julie Barnes, Administrative Manager; faculty members Dr. Suzanne Rivoire, Computer Science, Dr. Bülent Sökmen, Kinesiology, and Dr. Mike Cohen, Biology; as well as numerous SST students. Forty-four blue ribbons were awarded and 20 cash prizes ranging from \$25 to \$250 were distributed to exemplary projects. Blue ribbon winners in grades 7 to 12 will advance to the San Francisco Bay Area Science Fair.

Dr. Mark Perri, Chemistry, headed the coordination of the Fair on Sonoma State's end. One of his major tasks was organizing workshops and

demonstrations for the students. Workshops included DNA Extraction (Dr. Jenn Lillig, Chemistry), Science Careers (Dr. Steven Farmer, Chemistry), Chemical Indicators (Dr. Carmen Works, Chemistry), and A Walk Through the Watershed (Frederique Lavoipierre, Entomology Outreach). Demonstrations were put on by the Chemistry Club and the Physics Club. The Nursing Club and NASA E/PO also provided educational displays.

In addition to providing major funding for the Fair, the non-profit Synopsis Outreach Foundation is paying for the costs of the six top rated projects and their creators to advance to the California State Science Fair in Los Angeles. The top rated projects were done by Elijah Suchard (Hillcrest Middle School, Sebastopol), and Olivia Songster, William Humphreys, Cristian Mata, Anna Barney, and Jon Wheeldin (all from Technology High School, Rohnert Park).

One of the Science Fair projects.



PHYSICS OF MUSIC



Professor Michieal Jones and his students are investigating the physics behind Weill Hall's superb acoustics in his Physics of Music class. Apparently, Weill Hall is almost identical to Musikverin in Vienna, said to be the world's preeminent classical music venue. Thanks to the two halls' shape and proportions—along with the strategic placement of its boxes and decorations—music is heard the way it is intended to sound. The halls illustrate the true nature of sound and are excellent tools to explain how to control acoustics for a specific goal.

Jones used Weill Hall to illustrate specific concepts taught in his class: standing waves, reflection, absorption, exponential decay, timber, tonal coloration, and aspects of human sound perception. Jones hopes to have his undergraduate physics students perform a detailed acoustical workup and illustration of Weill Hall as a future research project.

CHEMISTRY DEPARTMENT NEWS

The 2012-2013 academic year marks the first year of the Chemistry Department's Freshman Year Learning Cohort. Chemistry and biochemistry majors currently in their freshman year are co-enrolled in Quantitative General Chemistry, calculus, and the new critical thinking course titled "Think Like a Scientist."

Dr. Mark Perri worked with the Sonoma County Office of Education in organizing the annual Sonoma County Science Fair's first year at Sonoma State. Dr. Perri organized workshops ran by faculty members and student clubs, and recruited student volunteers and people to serve as judges. Drs. Carmen Works, Steven Farmer, and Jenn Lillig, all of the Chemistry Department, were among those leading workshops for the students. See page 10 for more information on the Science Fair.

Seven majors from the Chemistry Department have been accepted into multiple PhD programs in chemistry, biochemistry and chemical biology across the country. The schools they've been accepted to include: Johns Hopkins, Michigan State, University of Illinois Urbana-Champaign, Cornell, UC San Francisco, UC San Diego, UC Irvine, UC Santa Barbara, UC Los Angeles, and Colorado State.

SCIENCE FESTIVAL

The SSU Field Stations & Nature Preserves and School of Science & Technology are partnering to create Sonoma State Science Festival: A Walk Through the Watershed. The event, hosted in conjunction with Seawolf Day, Saturday, April 13, invites prospective students and community members to explore a 40-foot interactive display to learn how all fields of science are used to study local watersheds. The display leads visitors to further explore hands-on activities available in each of our Departments and to talk to our students and faculty about what it's like to be a scientist at SSU.

All of the event displays are designed by students. The event team includes a biology student team in charge of designing the lobby display and student clubs that are creating and staffing department activities. The event leverages the existing departmental activities of Seawolf Day and creates a hands-on interactive experience that invites our local community to learn more about science at SSU.

KINESIOLOGY MAJORS ASSESS FITNESS OF SECONDARY STUDENTS

Kinesiology students interested in teaching and coaching are currently enrolled in KIN 420 Middle School Physical Education. The course provides methods for effectively planning and implementing physical activity lessons to adolescents. KIN 420 students are currently learning about health-related and skill-related fitness concepts. As part of the curriculum they are being trained to reliably use the FitnessGram, a fitness test

used for state fitness testing in grades 5, 7, and 9. Students are learning how to evaluate fitness scores and make them a meaningful part of the physical education curriculum. KIN students will design activities and

assignments to develop the motivation, skill, and knowledge of secondary school students and to maintain and/or reach healthy fitness levels in aerobic capacity, body composition, strength and endurance, and flexibility.

KIN 420 students practiced using the FitnessGram in class and are now participating in a practicum experience testing 9th grade students at Montgomery High School in Santa Rosa, under the direction of an SSU Kinesiology graduate student who teaches there. This partnership affords Kinesiology majors valuable experience in working with teachers and students during fitness testing.

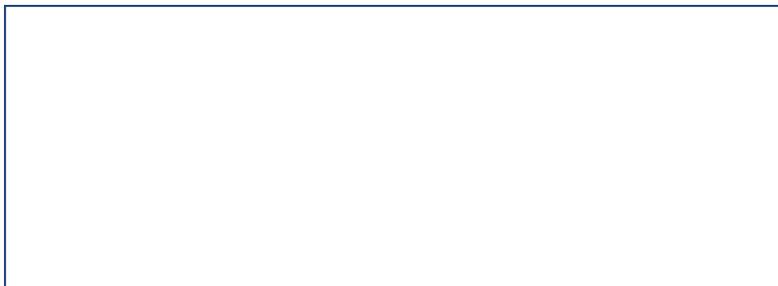
KIN 420 students overseeing the push-up test endurance at Montgomery High.



Speaking of Fitness...

Don't forget that the **Fitness Center** in the Physical Education Building, located in PE 6, is **open to all SSU staff and faculty from 12-2pm, Monday through Friday**. The facility has weight machines, cardio equipment, mats, exercise balls, and free weights. The program is co-sponsored by the Department of Kinesiology and the University Health and Wellness program, headed by Craig Dawson. Come join your colleagues in some healthy exercise and friendly company!

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