



Jonas Umlauf: Soaring on Court and in the Classroom

On any given night at a UH Warrior men's volleyball match, it quickly becomes evident that the player wearing the number 10 jersey possesses a special skill set and mastery of the game with thunderous, high-flying spikes. In fact, for the second consecutive season, Jonas Umlauf was named to the American Volleyball Coaches Association All-American First Team and for the second consecutive year, led the nation in kills.

What is unknown to most is that Umlauf is equally as talented in the classroom as an electrical engineering major. His dominance on-court is matched in the classroom as Umlauf carries a current GPA of 3.93 in what is traditionally known as the most difficult area in engineering. In fact, he has already taken junior level classes and may be able to complete his undergraduate degree in three and a half years.

What is refreshing about Umlauf is that he does not fit the mold of the stereotypical athlete. After a stellar four-year career in volleyball at Landschulheim Kempfenhausen High School in Stamberg, Germany, including winning the 2008 German National Championship, Umlauf could have easily transitioned to a successful professional career in Europe. Instead, he chose to come to the United States and to the UH Mānoa to study electrical engineering.

Continues on page 2



Teams with UH Mānoa Engineering Ties Finish 1-2-3 in the 2011 UH Business Plan Competition



PloXimer Materials

Technologies developed by faculty and researchers at the University of Hawai'i at Mānoa College of Engineering played key roles in each of the top three winning teams at the recent UH Business Plan Competition (BPC).

First place was awarded to PloXimer Materials. Mechanical Engineering Professor Lloyd Hihara and Researcher Atul Tiwari developed a patent pending chromate-free coating, called SiloXel™, to protect aluminum. Unlike earlier chromate-based coatings, it is non-carcinogenic, contains titanium dioxide that provides natural UV protection and applies clear for more aesthetic appeal. Other team members are Douglas Cullison, Lena Mobin and David Schmidt.

A Message from the Dean



Peter E. Crouch

In today's complex and competitive technological world, we are beginning to see the emergence of a new breed of engineer—one who not only understands technology, but who also possesses the essential principals of business, innovation and entrepreneurship.

We need to look no further than Holmes Hall to see that we are prepared to meet these new demands with our success in two competitions organized by the Pacific Asian Center for Entrepreneurship at the Shidler College of Business. Technologies developed by faculty and researchers at the UH Mānoa College of Engineering played key roles in each of the top three winning teams at the recent UH Business Plan Competition. In the 2010 Breakthrough Innovation Challenge, teams from engineering took first and second place honors by successfully pitching their innovations and commercial value.

And speaking of success, in this issue we are proud to feature UH Warrior men's volleyball player Jonas Umlauf, who is a star both on the court and in the classroom.

Finally, I'd like to welcome two new members to our engineering team: S.T.E.M. Marketing and Public Affairs Officer Myhraliza Aala and Director of Development Robert Saarnio. I hope you have an opportunity to meet them soon.

Aloha!

Peter E. Crouch
Dean

Umlauf continued



"I came to the U.S. to combine academics and athletics as a way to challenge my brain, which would not have been possible had I stayed," said Umlauf. "Playing professionally is still an option after I graduate, but it's not my favorite thing to pursue."

What Umlauf would like to pursue is a career in electrical engineering back in Germany, where he left a lot of broken items and gadgets around his parents' home in Stadtbergen. He credits his early interest in engineering to a fascination with disassembling things. Luckily for the Umlauf household, his father Juergan was an electrical engineer and could piece together the results of his son's curiosity.

"I had a lot of fun taking things apart to see how they worked, but after I reassembled them, they wouldn't work," he said. "I was tired of breaking things, so I decided to learn how things worked."

His need to understand how things work, combined with his hobby of flying radio controlled model airplanes, led Umlauf to electrical engineering.

"I usually bought assembled sets, so there was not much to modify in terms of the aerodynamics," he said. "So for optimization purposes, I focused on the electrical components like the engine, controller and receiver."

"For me, design is the most interesting part of EE because you have the most freedom to solve a problem 'your way,'" he added. "You have a lot of variables to take into account and you see what tradeoffs engineers in the real world are facing."

For Umlauf, the key to success on the court and in the classroom, despite the rigors of practice, matches and travel, is to approach classes with the same mindset of treating every drill in practice as though it were the championship match.

Electrical Engineering Assistant Professor Aaron Ohta, one of Umlauf's instructors, is impressed by his conscientiousness. "Although he must adhere to a tough physical training schedule, and travels frequently for road games, he has still managed to complete all of his assignments," said Ohta. "In class, he is attentive, and asks questions that demonstrate his ability to quickly grasp concepts in a difficult subject like electrical circuits."



HCES Recognizes Three from UH Mānoa

UH Mānoa engineering alums Stanley A. Tamanaha, Sheryl E. Nojima and recent graduate Travis Hee Wai were recognized by the Hawai'i Council of Engineering Societies at the 2011 Engineers Week Banquet held this past February.

Stanley A. Tamanaha, P.E.



Stanley Tamanaha

Tamanaha, a 1966 graduate in civil engineering, was presented with the 2011 HCES Lifetime Achievement Award for an impressive 37-year career that included the Naval Facilities Engineering Command (NAVFAC), Pacific Air Forces (PACAF), U.S. Pacific Command (USPACOM) and City and County of Honolulu.

After a four-year stint with the U.S. Air Force in Vietnam and earning a Bronze Star for distinguished service, Tamanaha returned to Hawai'i in 1970 and spent the next 10 years with the City and County of Honolulu's Departments of Public Works and Transportation.

In 1980, he joined NAVFAC as the supervisory engineer and deputy resident officer in charge of construction (ROICC) at Kaneohe Marine Corps Air Station, where he received over 36 exceptional service honors and was selected as NAVFAC's Pacific Engineer of the Year in 1992. After a tour as the first commander of the 945th Civil Engineer Squadron, Tamanaha was assigned to USPACOM and was instrumental in the planning and design of the new headquarters facility before his retirement in 1993.

Tamanaha was selected as the supervisory engineering and deputy ROICC, Middle Pacific in 1995. Under his watch, he oversaw the construction of \$5 billion in projects, including the Ford Island Bridge, USPACOM Headquarters Building, the relocation of air wing support facilities from NAS Barbers Point to

MCB Hawai'i, the recapitalization of 1000 Navy homes and the clean up of Kahoolawe.

Sheryl E. Nojima, PhD, P.E.



Sheryl Nojima

Nojima, president of Gray, Hong, Nojima & Associates, the state's only female-owned small business civil engineering consulting firm, was presented with the 2011 Engineer of the Year Award by the Hawai'i Society of Professional Engineers (HSPE).

She received her BS, MBA and PhD from UH Mānoa, earned an MS in civil engineering from UC Berkeley, and is a licensed professional engineer in two disciplines – civil engineering (Hawai'i and Oregon) and environmental engineering (Oregon). Nojima has worked in both the private and public sector in Hawai'i, including M&E Pacific, the City and County of Honolulu, Department of Public Works and the UH Mānoa College of Engineering, where she served as assistant dean from 1995-2000.

Nojima is currently president of the American Council of Engineering Companies of Hawai'i and has been a member of the board of directors since 2004. From 2001-2003, she also served as president of HSPE and was instrumental in establishing the HSPE Educational Foundation, which provides tax-exempt financial support to future engineers through college scholarships, the Fundamentals of Engineering exam reimbursement program and the MATHCOUNTS® Competition.

Nojima is chair of the Committee on Capital Improvements for the Department of Education's Office of School Facilities & Support Services Advisory Council, a member of the College's Civil and Environmental Engineering's Industrial Advisory Council and is also a member of the Dean's Advisory Council.

Travis Hee Wai



Travis Hee Wai

With phenomenal academics, it was clearly evident that HCES had an easy selection of Travis Hee Wai at its 2011 Student Engineer of the Year Award. Since entering the College as a Regents Scholar in 2007, Hee Wai has maintained a 3.90 overall GPA, a 3.98 in electrical engineering and has made the Engineering Dean's list every semester. He graduated this past May and is planning to attend graduate school.

In addition to his stellar academic scores, Hee Wai has also scored big on a number of projects. He has worked in the Biomedical Sensors Laboratory on the development and testing of sensors designed to detect various medical diagnostic targets including heart attack, disease, cancer, viruses and bacteria. He collaborated with Professor James Yee on a Navy communications network project and was involved in a project with the University of Hawai'i's Infrasound Laboratory on analyzing applications of infrasound (low frequency waves).

Amazingly with his hectic schedule, Hee Wai has found time for himself and to help others. He has tutored special education students in math and coached both cross country and track and field teams at Kalani High School, his alma mater, and participated in the UH Intramural Outdoor Soccer and the Men's Island Soccer Organization leagues.

Hakulau

Hakulau, "to make drawings or plans" in Hawaiian, is the newsletter for the College of Engineering at the University of Hawai'i at Mānoa. It is published twice a year by the Marketing and Public Affairs Office, 2540 Dole Street, Holmes Hall 240, Honolulu, Hawai'i 96822 and is circulated to the over 6,500 alumni and friends of the College of Engineering. If you have comments, suggestions, news, even an address change, please contact us at (808)956-7584 or e-mail hakulau@hawaii.edu.

College of Engineering

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The University of Hawai'i at Mānoa is an equal opportunity/affirmative action institution.

NG Gift Northrop Grumman representatives presented an \$11,000 check to the College of Engineering prior to Spring Career Day 2011. The student chapters of ASME, IEEE, SWE and the College's Small Satellite Program were beneficiaries of Northrop Grumman's generosity.



New Director Of Development



Robert Saarnio

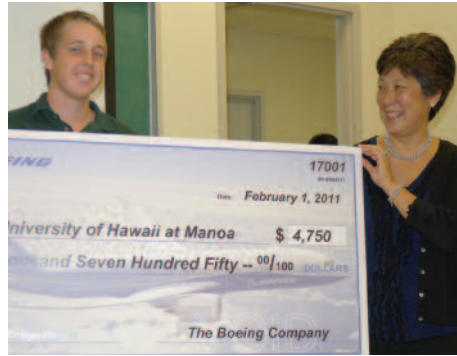
The University of Hawai'i Foundation has appointed Robert Saarnio as director of development for the College of Engineering. In his new role, Saarnio will be responsible for the identification, cultivation, solicitation and stewardship of private philanthropic gifts.

Saarnio most recently worked on special projects for the dean of the UH Mānoa School of Architecture and as a consulting executive advisor to the Washington Place Foundation. In 2008, he was named as deputy director of the Honolulu Academy of Arts and in 2006, he was appointed as associate director and historic property manager of the Doris Duke Charitable Foundation's Shangri La estate and museum in Honolulu.

"Our search for a development officer took a while, but I think we found a great fit for our College," said Dean Crouch. "Robert's extensive background in philanthropy will serve us well."

He has served in a number of leadership positions in the museum field, including as curator of architecture at the Peabody Essex Museum in Salem, Massachusetts and as director of museums and curator of university collections at Johns Hopkins University. Saarnio received his AB degree in fine arts/architectural history from Harvard University and his MS in historic preservation from the University of Pennsylvania.

Boeing Continues Its Support



CubeSat Design Project

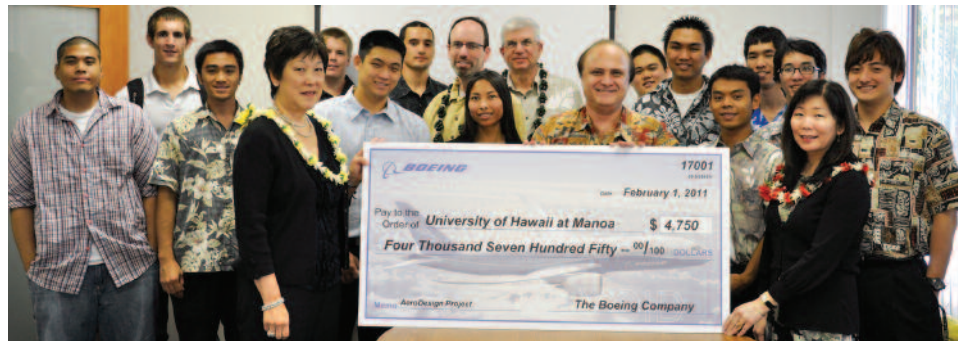
The Aero Design project received \$4,750, the Mini Baja project received \$4,400 and the Supermileage project received \$2,500.

"I would like to thank Boeing for their generous gift that will benefit our mechanical engineering students and programs," said Mehrdad Ghasemi Nejhad, mechanical engineering chair. "We are grateful for their long-standing support of engineering programs at UH Mānoa and to be the recipients of their generosity."

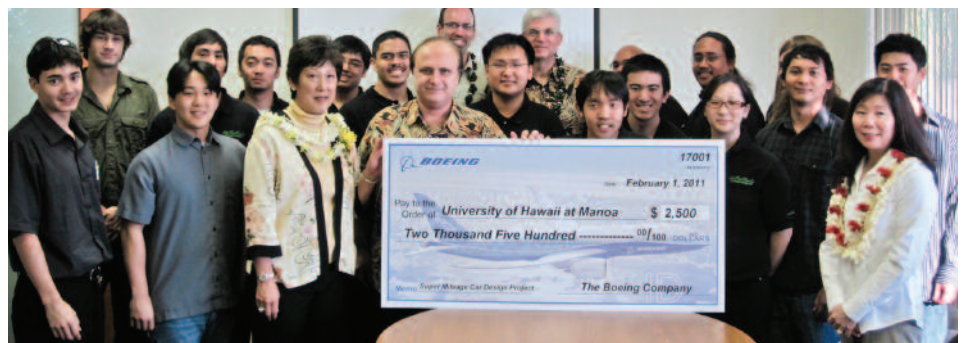
Later in the month, Boeing presented a check in the amount of \$4,750 to Professor Wayne Shiroma's outstanding CubeSat program and in April, they furthered their support of the College by purchasing a \$10,000 platinum table sponsorship at the engineering banquet.

During the month of February, The Boeing Company presented four engineering programs with checks totaling over \$15,000, which included a two-day visit to the UH Mānoa College of Engineering.

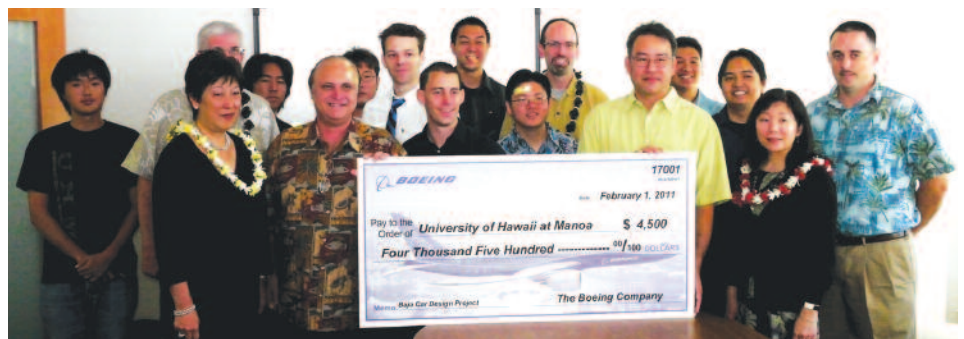
During the visit, Boeing executives and engineers got to learn more about the College's programs with design reviews of the Aero Design, Mini Baja and Supermileage student projects. As a bonus, lead project engineers from Boeing presented information about their new commercial aircraft to students in the ME 213 and ME 371 classes.



Aero Design Group



Supermileage Group



Mini Baja Group

1-2-3 continued



Renewable Water Technology LLC

Second place was awarded to Renewable Water Technology LLC (RWT). Mechanical Engineering Associate Professor Weilin Qu and Researcher Riley McGivern developed the technology for a solar/waste heat driven humidification-dehumidification (HDH) seawater desalination process that will eliminate the high cost, high energy use of traditional desalinization systems. Team members also include Ryan Sato and Jeremy Uota.

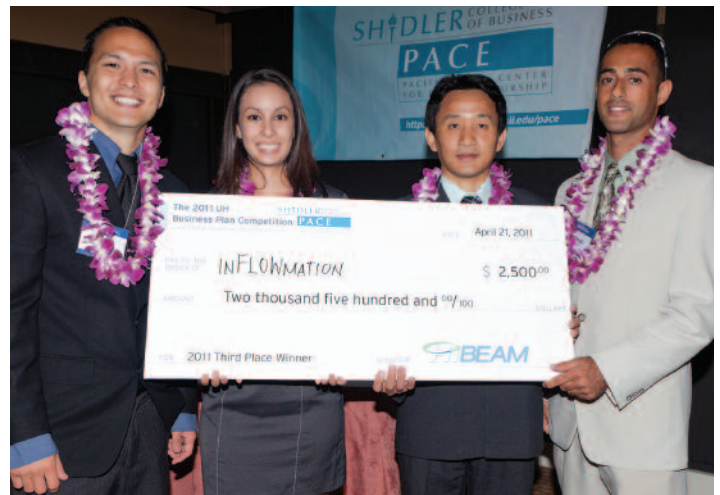
Third place was awarded to InFLOWmation, Inc. Electrical Engineering Assistant Professor David Garmire and Researcher John Hirano provided the technology for a small and accurate, low-cost and self-contained anemometer to measure wind speed. Team

members also include Kuenzang Dorji, Firaas Hakim, Jenna Nishita and Josiah Nishita.

"To be successful, today's engineer must understand technology as well as the essential principles of business," said Dean Crouch. "I'm pleased that our faculty and students are embracing the spirit of innovation and entrepreneurship."

The annual competition, coordinated by the Pacific Asian Center for Entrepreneurship (PACE) at the Shidler College of Business, is an intense and unique learning opportunity for UH students to pursue a business idea and develop their business savvy. Winners were awarded substantial cash prizes.

"I'm pleased to see multi-disciplinary teams shining in the BPC," said Susan Yamada, PACE executive director. "The beauty of the BPC is that it provides the opportunity for business students to collaborate with scientists and researchers on real-life projects. This is exactly the kind of synergy that we strive for at the University."



InFLOWmation, Inc.

Innovative Engineers

Sliced bread was a great invention. But if someone needed indoor/outdoor surveillance in a hazardous environment or was in the market for a safe and low environmental impact off-road vehicle, that slice of bread comes up a bit short. Thanks to the innovations of two engineering teams participating in the 2010 Breakthrough Innovation Challenge, those needs might soon be addressed.

Organized by the Pacific Asian Center for Entrepreneurship (PACE) in partnership with the College of Engineering and the William S. Richardson School of Law, the competition challenged UH students and faculty to publicize their innovations through a two-minute YouTube video. After the last video rolled from the eight teams entered, UH Mānoa engineering finished in first and second place, winning \$1,000 and \$500, respectively, to further develop their innovations.

First Place — Flycopter

A low-cost, small flying multi-rotor platform that can be used to survey dangerous environments utilizing mounted high-definition or thermal imaging cameras.

Members: Jeremy Chan, Elizabeth Gregory, David Hummer, Zachary Lee-Ho, Michael Menendez, Miguel Nunes and Reid Yamura

Second Place — Mini Baja

A safe off-road vehicle that is environmental-friendly. Mini Baja integrates the use of seat belts and a roll cage with a 10-horsepower, four-stroke engine.

Members: Matthew Asada, Willy Diguc, Rob Grimmet, David Hummer, Lance Kimura, Michael Menendez, Ross Mukai and Kyle Wong



Flycopter



Mini Baja

Another Successful Banquet

In its 11th year, the College of Engineering banquet continues its tradition of success as over 600 alumni and friends were in attendance at the Hilton Hawaiian Village's Coral Ballroom on April 14th. Over \$100,000.00 was raised for student programs at the College.

This year, guests were treated to a record number of student project displays in the lobby upon their arrival. Later in the evening, attendees got a spirited talk on renewable energy in Hawai'i by video game entrepreneur and sustainability advocate Henk Rogers, president and CEO of Blue Planet Software, Inc. and chairman of Blue Planet Foundation. Following a delicious six-course Chinese dinner, guests were entertained by the popular question and answer session with students, as well as the special presentation on the Solar Decathlon by members of Team Hawai'i.

The presentation of two special awards to engineering alumni was the highlight of the evening.

of Park Engineering from 1985 to 1988. Prior to that, he served as chief engineer of the City and County of Honolulu, from 1981 to 1985. He also taught at the UH Mānoa from 1970 to 1981 where he directed graduate instruction and research in environmental engineering. In 1990, he was named "Hawai'i State Engineer of the Year" by the Hawai'i Society of Professional Engineers. Chun earned his doctorate in environmental health engineering and bachelor's degree in civil engineering from the University of Kansas. He holds a master's degree in civil engineering from UH Mānoa.



Martin Nakasone, Dean Crouch and Outstanding Service Award winners Diane Kodama and Derek Mukai



Michael Chun receives the Distinguished Alumni Award from Ron Ho.

Distinguished Alumni Award

Michael J. Chun

*President and Headmaster,
Kamehameha Schools – Kapalama*

Dr. Chun is an active participant in professional, community and business organizations. He is a director of the Hawai'i Association of Independent Schools, trustee of Hawai'i Pacific University, board member of the Hawai'i Medical Services Association, and director of the Metropolitan Board of the YMCA of Honolulu. Dr. Chun is also a director of Alexander & Baldwin, Inc., Matson Navigation Company and Bank of Hawai'i.

Prior to his appointment as Kamehameha Schools president, Chun was vice president

Outstanding Service Award

Diane Y. Kodama

Senior Project Manager, AECOM

Kodama (BSCEE '91) has been involved with the Engineering Alumni Association of the University of Hawai'i since 1992, and has served as treasurer, president and is currently a director of the UH Alumni Association. Since 2008, she has co-chaired the food and beverage committee for Holmescoming, which has raised over \$150,000 for the College. Kodama has been influential in coordinating UH Mānoa fundraising efforts and community events and has been recognized as a driven community leader.

Derek K. Mukai

*Principal Engineer,
Community Planning and Engineering*

As an active supporter of UH Mānoa, Mukai (BSME '89) has been involved with EAAUH since 1990, served as president in 1995 and has been a member of the College of Engineering Development Advisory Committee since 2006. For over 20 years, Mukai has lead and organized UH Mānoa community events that have brought in over \$250,000 in donations and sponsorships for the College. He is currently a director of the Engineering Alumni Association of the University of Hawai'i and the University of Hawai'i Alumni Association.

Banquet Exhibitors Win Science Prize



Sara Middendorf (l) and Shawanlyn Sunagawa explain their project to a banquet guest

Shawanlyn Sunagawa and Sara Middendorf of St. Andrew's Priory, who took part as guest exhibitors at the engineering banquet, won a special award at the 62nd Intel International Science and Engineering Fair held recently in Los Angeles.

The senior duo each received \$1,000 and additional prizes for their project, PAWT (Polygonal Airfoil Wind Turbine), the Greener Future: An Innovative Approach to Engineering a Bladeless Wind Turbine, in the electrical engineering category. The award was given by United Technologies Corporation.

Sunagawa and Middendorf placed second in their district fair under the Hawai'i Association of Independent Schools and were invited to compete in the national competition as a top finisher in the Hawai'i State Science and Engineering Fair sponsored by the Hawai'i Academy of Science.

UH Mānoa Nanosatellite Team Receives Two Awards in National Competition



UH Mānoa NanoSatellite Team

A team of UH Mānoa electrical and mechanical engineering students won the third place and most improved awards at the University Nanosat Program competition held in January.

Since 2009, the students have been a part of the joint program run by the Air Force Office of Scientific Research, Air Force Research Laboratory and the American Institute for Aeronautics and Astronautics, which provides a rigorous, two-year, concept-to-flight-ready spacecraft development experience to train tomorrow's space professionals. As one of 11 schools to be selected to participate in the national competition, the UH Mānoa team received a grant of \$110,000.

The other ten schools in the competition were Cornell University, Georgia Tech, MIT, Michigan Tech University, Missouri State University of Science and Technology, Montana State University, Santa Clara University, St. Louis University, University of Central Florida and the University of

Minnesota. The UH Mānoa team was also selected for participation in the 2011-2013 competition, which includes an additional \$110,000 grant.

In keeping with the UH Mānoa Small Satellite Program's 10-year tradition of giving its satellites Hawaiian names, this one was named Ho'oponopono, "to make right," an appropriate name given for its mission of providing calibration for radar stations around the world. Ho'oponopono, awaiting selection by NASA for a launch date, is approximately 30 times smaller than the primary calibration satellite currently in orbit, which is operating 16 years past its expected lifetime and facing imminent failure.

More than 30 students participated on the UH Mānoa team, which was mentored by Electrical Engineering Professor Wayne Shiroma, as well as by engineering teams from InDyne and Northrop Grumman Aerospace Systems. Additional support was provided by The Boeing Corporation.

New S.T.E.M. Marketing Officer Appointed



Myhraliza Aala

The College of Engineering is pleased to announce the appointment of Myhraliza Aala as S.T.E.M. marketing and public affairs officer.

Aala will be responsible for the college's S.T.E.M. (Science, Technology, Engineering and Mathematics) outreach efforts, including positioning and messaging, event coordination, enrollment management, communications and publicity.

Prior to her recent appointment, Aala served as associate director of new student programs at the University of Hawai'i at Hilo, responsible for the planning, management, implementation and evaluation of new student orientation and transitional programs. Aala joined UH Hilo in 2006, after nine years at San Diego State University, where she most recently served as manager and project coordinator for the dean of undergraduate studies.

"We are extremely pleased to have Ms. Aala on board to help spearhead our initiative to increase interest in S.T.E.M. and UH Mānoa engineering in the schools," said Dean Crouch. "It is evident from her past experience, that Ms. Aala has the ability to engage students and garner support from the local community and businesses. We look forward to working with her."

Aala holds a BA in psychology and an MA in communication from San Diego State University, and is currently working on her doctorate of education in educational leadership through the University of Southern California's cohort program. She is a member of the National Association of Student Personnel Administrators.

Doctoral Student Awarded by ARCS-Honolulu



Yuriy Mikhaylov

Yuriy Mikhaylov, a civil and environmental engineering doctoral student, received the 2011 Bretzlaff Foundation Award in Engineering from ARCS-Honolulu and \$5,000 to further his research.

In light of this year's devastating earthquake and tsunami in Japan, Mikhaylov's research on tsunami-resistant structures is now more important than ever. His research involves the

design of six prototypical buildings in several locations of varying seismicity and soil types. The buildings will be subjected to tsunami loads in modeling studies that consider eight kinds of forces, including height and velocity of waves and debris damming, to analyze the behavior of the structures. According to Mikhaylov, the end result will be a set of guidelines for tsunami-resistant designs that could be incorporated into building codes.

Mikhaylov received both his bachelor's and master's degrees from UH Mānoa and is

currently working as a structural designer for Baldridge and Associates Structural Engineering. In his spare time, he plays violin for the University of Hawai'i Symphony and at various functions statewide.

The Achievement Rewards for College Scientists (ARCS) Foundation provides scholar awards to academically outstanding U.S. citizens studying to complete degrees in science, medicine and engineering.

Calendar of Events

AUG 2011

Head Start

August 19

Fall Semester Begins

August 22

OCT 2011

Fall Career Day

October 14

For more information about upcoming College of Engineering events, please visit www.eng.hawaii.edu/events or call (808) 956-7727.

Knapp, Yun Retire



Ronald Knapp

Mechanical Engineering Professor Ronald H. Knapp and Electrical Engineering Professor David Y.Y. Yun recently retired from the College. Knapp joined the College in 1975 and Yun came to UH Mānoa in 1989 and became a full-time faculty member in 1992.

"We will miss the contributions of both Ron and David in their respective departments and at the College," said Dean Peter Crouch. "We thank them for their service and wish them well."



David Yun

Mililani H.S. Students Visit Mānoa



Professor Berkelman and RA Stephen Fabel precisely instruct an MHS student on the robotic surgery controls

Last November, over 40 students from Mililani High School visited the College of Engineering to get an insight of engineering at the next level.

The students, from Timothy Pregana's Design Technology and Electronics and Electricity Technology classes, were welcomed by Director of Academic Affairs Tep Dobry and given a brief overview of the College's admission requirements and curriculum. Following the briefing, students got the opportunity to tour Professor Wayne Shiroma's small satellite laboratory and operate the mechanical arms in Assistant Professor Peter Berkelman's robotic surgery laboratory.

"By opening your doors and showcasing your labs, it helps my students to understand what you have to offer," said Pregana. "I want my students who plan to pursue engineering to select UH Mānoa."