



Fairfield
UNIVERSITY

School of Engineering NEWS



SOE moves to
Bannow (pg. 3)

TABLE OF CONTENTS

Message from the Dean.....2
 School of Engineering Moves to Bannow3
 Fairfield’s ‘Women of Innovation’ finalists3
 Bringing Clean Water to a Farming Community in Bolivia.....4
 Undergraduate SOE Senior Design Project 2013-145
 Annual Business Plan Competition6
 Governor Dannel Malloy Honored at Fairfield7
 Sophomore Book Award Winners7
 Faculty in the News.....8
 Retirements9
 Alumni Profile: William Lynch 10
 A Visit from Cameroon 11
 Fairfield School of Engineering Strategic Plan..... 11
 High School Students at Computing Education Academy 12

Message from the Dean



We are so pleased that Fairfield’s School of Engineering (SOE) has experienced phenomenal growth in its graduate programs during this past year. Enrollment increased to over 150 students in spring 2014 (from an average of less than 130), and we have accepted over 200 new applicants for the fall semester. We predict we will be near

250 graduate students enrolled this coming fall semester, the top graduate student enrollment we can comfortably sustain within our current resources. The current success is the result of a deliberate and sustained effort in international recruiting supported by the Fairfield University International Students office under Christopher Johnson. The easing of student visas by the U.S. government has also helped sustain this success. Most of these students are currently from India and find the masters degree currently offered by Fairfield to be a great and timely value. The doubling of the graduate student population presents unique challenges to the SOE and to the support services at Fairfield such as provided through the library to support our students in writing and research.

The SOE is also planning to improve the quality of the graduate

experience by growing external funding for master-level thesis research. This growth will need to be a thoughtful and focused process as new faculty, young in their research careers, are recruited into the SOE.

We are excited to announce a new dual BS/MS program in mechanical engineering this fall along with a new BS program in bioengineering, both pending state approval. Additionally, we have received approval at the University to bring the computer science program into the SOE and will create the combined Department of Computer Science and Software Engineering. We have begun the development of a dual degree program that would allow students to complete any of the undergraduate degrees in engineering followed by the master’s degree in Management of Technology (MOT). The MOT degree provides entrance into professionally and financially rewarding career opportunities and we believe this will be another popular program in our portfolio of Five-Year BS/MS degrees.

Bruce W. Berdanier, PhD
 Dean

School of Engineering Moves to Bannow

The soaring, light filled, contemporary spaces of the Bannow Science Center make it a natural fit for the School of Engineering, which has moved from its former home in McAuliffe Hall.

Since the semester began, engineering students and faculty have been enjoying newly-renovated classroom and lab space in the Bannow Science Center, moving in even while workers put the finishing touches on offices.

“McAuliffe Hall, previously the home of the School of Engineering, is a beautiful, historic building, but it’s not designed for engineering studies,” says Dean Bruce Berdanier. “While the classroom space is beautiful, the labs are long and narrow, making it awkward to teach, and the corridors are winding and dark.”

Moving the School of Engineering to the Rudolph F. Bannow Science Center has had a number of benefits, he says, including “wide open spaces that are inviting to students, and lab space that was designed for that purpose, making it beneficial for both students and professors.” And locating the School within the same building as math and physical sciences classes, and next door to the School of Nursing, opens up a range of possibilities for easy collaboration and cross-disciplinary projects, some of which are already underway.

The large Mechanical Engineering laboratory with its many windows is especially welcome, as mechanical engineering is by far the most popular major in the school. Several significant

pieces of equipment purchased over the last few years allow students to conduct advanced vibration studies, test compression and tensile strength, understand heat transfer and flow velocity, and engage in fluid dynamics experiments.

“The numerically controlled lathe and milling machines procured with funds from the Brinkman Foundation are instrumental in the education of the next generation of engineers coming from Fairfield University,” said Dr. Shah Etemad, director of the mechanical engineering program. “It is our responsibility as an educational institution to provide the necessary tools and support to address the changing workplace and we are thankful for the Brinkman Foundation for recognizing this necessity and responding to it.”

This fall, the Mechanical Engineering Program will offer a dual BS/MS degree, and has applied for licensure through Connecticut for the dual program. Once approval is obtained, the SOE will have dual BS/MS programs for all of its accredited degree programs.

The School of Engineering will maintain some space on the first floor of McAuliffe Hall for the near future. “We’ll need some area for a microelectronics lab and automated manufacturing courses,” says Dr. Berdanier, adding that senior design teams will continue to use McAuliffe throughout the year to work on their projects. Proposals for the future use of the building are still under discussion.

Fairfield’s ‘Women of Innovation’ Finalists

Dr. Amalia Rusu, associate professor of software engineering, was nominated for an Academic Innovation and Leadership award by Women of Innovation® program presented by the Connecticut Technology Council. Mechanical engineering student Katherine M. Pitz’15 was nominated for Collegian Innovation and Leadership by the same group.

Dean Bruce W. Berdanier said both Dr. Rusu and Katherine are dedicated to sharing word of the promise of engineering on campus and off. “They continually inspire others, especially young people, to get excited about engineering and the endless possibilities of science, technology, engineering and math.”

Pitz is studying the feeding habits of Amia fish and their intriguing circular shaped mouths under Assistant Professor Shanon M. Reckinger, Fairfield’s Clare Boothe Luce Professor. She serves in campus leadership roles with the American Society of Mechanical Engineers and the Society of Women Engineering.

Dr. Rusu has been named 2008 Frontiers in Education New Faculty Fellow, awarded by the National Academy of Engineering Center for the Advancement of Scholarship on Engineering Education. Her outreach projects include the Computing Education Academy for high school students; the Google CS4HS workshops for Connecticut STEM teachers; General Electric Connecticut High School Computer Science Contest; and the Fairfield REU program in Math and Computational Science.



(L-R) Katherine M. Pitz '15 and Dr. Amalia Rusu

Bringing Clean Water to Farming Community in Bolivia

Fairfield University and South Dakota students collaborate on a service project

A group of Fairfield students are learning that water is a commodity that can come at a high cost. Without the proper infrastructure to rid water of bacteria, illness is likely to be widespread among people and farm animals. Water chlorination is greatly needed; according to UNICEF, 768 million people don't have access to safe, clean drinking water.

Students from the School of Engineering are tackling that problem in a rural farming community in Bolivia. Last August, Dr. Bruce W. Berdanier, the new dean of the school, and two undergraduates travelled to Carmen Pampa, where they

worked on a water treatment system at the Unidad Academica Campesina (UAC), "the united college for the peasants." A branch university of the Catholic University in Bolivia, the institution draws from 19 villages, offering programs in nursing, veterinary science, agriculture and teaching. Efforts involved modifying a chlorinator, a device that destroys parasites, bacteria, and other organisms in drinking water that can lead to disease.

"I think that a major part of what engineers do is to provide a service," said Dr. Berdanier, who has extensive experience in international service learning initiatives. "They see a problem and collaborate to fix it with their skills and knowledge."

Dr. Berdanier helped install the chlorinator in 2012 on the UAC upper campus with a student chapter of 'Engineers Without Borders' from South Dakota State University where he was department head of Civil and Environmental Engineering. South Dakota and Fairfield students collaborated on this most recent phase of the service project. Thanks to the equipment, the drinking water there now meets World Health Organization (WHO) standards for developing countries.



Fairfield School of Engineering Dean Bruce Berdanier and Sean McGuinness '15 (far left) and Katherine Pitz '15 (far right) joined Melinda Berdanier and students from South Dakota State University in Bolivia.

"What we did makes maintaining the chlorinator easier for the students," explains Katherine Pitz '15, who worked on the project with another Fairfield mechanical engineering major, Sean McGuinness '15. "We spent a lot of time surveying the land to build two more chlorinators on two different water systems that supply water to the lower campus. We also surveyed the land below the wastewater tank because future plans include building a wastewater treatment system."

In less than 20 years, UAC went from just 53 students to 700 students. Due to this expansive growth, UAC has had challenges in adequate potable water systems for its two campuses. The fulfillment of this service project will provide the university with consistent potable water, while eliminating problems with

student illnesses. It will also provide an answer to wastewater management, protecting down-stream communities from the waste generated by the university.

"A local doctor said on the recent trip that the chlorinator has helped reduce bacterial infections," said Dr. Berdanier. "We were quite pleased to hear that."

Feedback from the UAC community was also promising, with fifty-three percent of the people surveyed noting their health has improved since the chlorinator was installed.

The experience was eye opening for Pitz, who realized that engineering projects in developing countries must be very different than in America. "They have to be sustainable for the resources they have there," she said. "I think the most important thing about it is to help [Bolivians] learn to improve the systems themselves, so they do not have to rely on anyone in the future. Maybe they will be able to build a similar system in other places in Bolivia where clean water is needed."

Senior Design Projects 2013-14

1. Golf Flow - Development of Venturi Vacuum Pump for Retraction of Golf Balls from Diverse Golf Course Hazards

Margaret Osmulski (ME), Fred Wedley (ME), Mitchell Bell (ME), Frank Carnovale (EE)

Advisor: Dr. Mascarenhas

The team has recognized the market potential for a cost-effective and efficient device that can retrieve golf balls that are lost underwater. The design uses pumps to provide low-velocity flow from an inlet head to a discharge head.

2. High-Speed Production Track Development for Automated Manufacturing Material Flow Delivery

Joseph Mastroluca (ME), Alex Peras (ME), Brendan Peters (EE), Diego Mamani (EE)

Advisor: Dr. Denenberg. Mentor/Sponsor: George Warman (Energizer-Schick)

This project designs and develops a cost effective, off-the-shelf sustainable control for a manufacturing system vehicle. Two different designs are being implemented for prototyping. The first uses a programmable logic controller (PLC); the second uses a microcontroller, and will be implemented as a backup design. Co-sponsored by Energizer-Schick.

3. Robot Assisted Ribbon Bending

Nicole D'Addio (ME), Rema Bhatti (EE), Darren Mondezie (EE)

Advisor: Dr. Hadjimichael. Mentor/Sponsor: Rich Rosselli (Northeast Laser)

This project consists of an industrial/automation design in which the components of electro-mechanical systems are used to create an efficient way for bending small metallic ribbons needed for a biomedical device. The design integrates a Mitsubishi Robot and visual recognition algorithm via Cognex camera to create an autonomous process. The project is co-sponsored by the Northeast Laser Company.

4. SpinLeaf - Electric Powered Greens Spinner for Small Scale Farming Operations

Sharoz Seyal (ME), Colin Nerich (ME), Robert Governale (EE), Claudele Pierre (ME)

Advisor: Dr. Reckinger. Mentor: Fred Monahan (Stone Garden farm)

SpinLeaf is designing and building an Electric Greens Spinner for Stone Gardens Farm, a small-scale family farm in Shelton, CT. One of the farm's important and time-consuming tasks is the process of cleaning the loose leaf greens. The main function of the new apparatus will be to not only dry, but also clean the

greens, all in one cycle. The new model will be made of food safe material, and include safety features not present on the current model.

5. Development of Medical Device: Infrared Bone Mineral Density and Blood Flow Monitor

Stephanie Sutherby (ME), Robert Garrone (EE), Michael Raymond (EE), Joseph Musubire (EE)

Advisor: Dr. Munden. Mentor: Rafique Vahora. Sponsor: NASA Space Grant

Team BoneSmart looks to further develop a previous project devoted to monitoring bone mineral density and blood flow. Prolonged exposure to microgravity negatively affects bone mineral density in astronauts. This device will be wearable, non-invasive, and compact, and will use infrared light wavelengths to measure bone density. Wireless measurements, miniaturization, calibration of the device through testing on engineered artificial bones, integration and packaging have been accomplished.

6. Development of Advanced Carbon Fiber Impact Absorption Structure for Formulae F Race Car

Slawek Guzierowicz (ME), Eric Stephen (ME), Timothy Young (ME), Christopher Smith (ME)

Advisor: Prof. Steve Roux

Each year there are multiple crashes in racing that devastate the racing community. A front impact attenuator absorbs the energy of the crash to minimize the amount of energy absorbed by the driver. This team designs, develops, and fabricates a compact lightweight impact attenuator to be integrated into a Formulae F race car.

7. EMduino - Development of a Miniature Wireless Powering Device

Richard Howley (EE), Brian Arpie (CE), Rich Kovach (CE), Arodi Cruz (CE)

Advisor: Dr. Lyon. Mentor: Mr. Hugh Fullman

Arduino embedded microcontrollers represent a top interface contender in the future quantified world of sensors. EMduino is a modular add-on shield focused on providing energy to Arduino shield compatible products through smart ultra low power harvesting. Solar energy is harvested and stored in a robust manner using super capacitors; an onboard communication module allows the collected data to be wirelessly transferred to a secondary base station Arduino where it may be processed and utilized.

Annual Business Plan Competition

Prize money totaling \$20,000 split among the winners. Students had just minutes to make final pitches to panel of judges.

Innovative ideas for an app to revolutionize the scope of social, platonic meet-ups and a lightweight device that monitors bone density were the grand prize-winners of the University's Business Plan Competition. The Fairfield University undergraduates behind those ideas took home \$7,000 (venture track) and \$5,000 (social track) in prize money respectively at the April 14 finals attended by a standing room only crowd at the Charles F. Dolan School of Business.

Plans for a golf course management system and a website to donate textbooks to help students who can't afford them were the runners-up in the venture and social tracks, receiving \$3,000 and \$2,500 each in the process.

"These student teams showed that entrepreneurship and innovation is alive and well at Fairfield," Dr. Donald Gibson, dean of the School of Business, told the audience of about 200. "Our quest is to develop these ideas into viable businesses. To help them, the winners will get a chance at being clients of FAME [the Fairfield University Accelerator & Mentoring Enterprise], our business incubator in downtown Fairfield."

The finalists included industrious and imaginative teams of undergraduate students from the School of Business, the School of Engineering, and College of Arts & Sciences who pooled their skill sets to develop viable business plans.

The venture track consisted of new business ideas with a commercial focus. The winners were 'VentureOut' - an app to enable young professionals to gain access to microcosms of platonic, social meet-ups so that they can cultivate new friendships and network. The student team members are seniors Jennifer Le, an English major, with a double minor in marketing and biology; Gina Biondi, a double major in accounting and Information Systems; and Jessica Mendes, a communication major. Mentors were Gene Mauro, '92, Pearson/Consultant, and Matt Powers, '03, chief technology officer, Applico Inc.

Coming in second was 'Valet,' a multi-faceted tool to benefit golfers and golf courses/golf shops accessible from any web-enabled device, developed by seniors Cody Reinold, and Anthony Mingolello, both Information Systems & Operations Management majors. Mike Roer, president of the Entrepreneurship Foundation, Inc., was their mentor. Receiving \$1,000 each were two other teams: "Glove Guard" and "The Match University."

The social track consisted of new organizations that attempt to resolve a pressing social problem that markets have failed to resolve. The winners were BoneSmart - a wearable, wireless, non-invasive medical device that will measure bone density and blood flow. Team members are Robert Garrone, an electrical engineering major; Ralph Belfiore, an accounting major; Bernardo Navarro, an accounting and economics double major; Stephanie Sutherby, a mechanical engineering major; and Michael Raymond, an electrical engineering major. The device is also being developed for the School of Engineering's Senior Design course. Mentors are engineering faculty members Shahrokh Etemad, PhD, and Ryan Munden, PhD, as well as mentor coordinator David Murray, vice president, Integrated Sales and Marketing, NCM Media Networks.



BoneSmart (L-R) Michael Raymond, Stephanie Sutherby, Robert Garrone, Ralph Belfiore, Dr. Gibson, and Bernardo Navarro.

The competition is a three-year old endeavor that has introduced "a whole new style of learning" to students interested in entrepreneurship, and complements the Dolan School of Business's popular Entrepreneurship Program offerings. That program has also led to the FAME, a business incubator program that was launched last year with the Town of Fairfield and Kleban Properties.

The competition kicked off last fall to much fanfare. It was made possible by generous donations from Mary Lincoln Campbell MA '72; Joseph Bronson '70; Hugh Davis '95; and Chris Stephens. Faculty from the Dolan School, the College of Arts & Sciences, and the School of Engineering served as advisors to student teams as did business professionals and alumni.

Governor Dannel Malloy Honored at Fairfield

Fairfield University President Rev. Jeffrey P. von Arx, S.J., and School of Engineering faculty were among those on hand last winter for the presentation of an award to Connecticut Governor Dannel Malloy on the Fairfield campus.

The Governor, who has long been supportive of the state's technology sector and innovation community, was given the 2013 Innovation Policy Leadership Award by the Connecticut Technology Council (CTC).

The event at the Kelley Center brought together the School of Engineering community with like-minded people who see entrepreneurial engineering as vital to fostering economic growth in the state. It was sponsored by Fairfield University's School of Engineering, CTC, the Inventors Association of Connecticut (IACT) and the Angel Investor Forum (AIF). The mission of IACT is to bridge the gap between innovation and commercialization.

"There is an interface between entrepreneurship and engineering development, and it's important to the establishment of new companies and job creation," said Dr. Bruce W. Berdanier, professor and dean of the School of Engineering.

Dr. Doug Lyon, professor of computer engineering at Fairfield and IACT president, is experienced in developing start up busi-



(L-R) Fairfield University President Rev. Jeffrey P. von Arx, S.J.; Bruce W. Berdanier, PE, LS., professor and dean of the School of Engineering; Connecticut Governor Dannel Malloy. Photo courtesy of CTC.

ness models. "The role of entrepreneurship cannot be understated and has led to the creation of a series of businesses," said Dr. Lyon. "Presently, we have several teams competing in the [University's student] Business Plan Competition, and our students are very excited by the prospect of commercializing products."

Sophomore Book Award Winners

Each year, The University's Phi Beta Kappa chapter invites sophomores with a 3.5 average to submit papers they wrote as First Year students to the Sophomore Book Award committee. From this very competitive field, three winners are honored with a book award; this year, 40 students submitted their best work.

"We're looking for great writing, as well as serious engagement with the subject," noted Dr. David McFadden, professor of history and chair of the Sophomore Book Award committee. "Phi Beta Kappa is the oldest honor society in the country, and the purpose of the book award is to encourage great scholarship among first and second year students." The awards were books chosen specifically for each winner, relating to the subject they wrote about, he adds, "to encourage them to keep reading!"

Notable this year: the three winners were engineering, nursing, and business majors from the University's professional schools. "The value of a Fairfield education is the integration of the fan-

tastic core curriculum into every major field of study across our five schools," said Rev. Paul Fitzgerald, S.J., senior vice president for Academic Affairs. "That a business student, a nursing student, and an engineering student were singled out this year is a fine testament to the teaching skills of our entire faculty, who lead the undergraduates through the six pathways to an integrated education that prepares them to live lives of integrity for the greater good."

The three Sophomore Book Award winners are:

Ryan Brown, School of Engineering, for his paper, "Sophocles' Oedipus Rex."

Brianna Nunes, School of Nursing, for her paper, "Chekhov, Dysfunctional Families, and the Psychological Effects."

Michael Olynick, Dolan School of Business, for his paper on "Mozart, Bach, and the Business of 18th Century Music Composition."

Faculty in the News



Dr. Etemad

Shahrokh Etemad

Elected to the Board of Associates of the ASME-Internal Combustion Engine division; served as board member of Business Plan Competition (Dolan School of Business); served as session chair and judge at various technical conferences and engineering fairs. Presented and published “Advanced Technology Ignitor for High Power Density Engines”, ASME Internal

Combustion Engine Division’s 2013 Fall Technical Conference; published: “Fuel Flexible Rich Catalytic Lean Burn System for Low BTU Fuels”, Proceedings of ASME Turbo Expo 2013: Power for Land, Sea and Air.

Evangelos Hadjimichael

Named Teacher of the Year by the American Society for Engineering Education, New England Section, April 2014. Published “Higgs Particle” in News in Education, Connecticut Academy for Science and Engineering (CASE)/Hartford Courant, March 21, 2014.



Dr. Lyon

Douglas Lyon

Organized monthly conferences throughout the year for Inventors Association of Connecticut. Serves as an ABET Program Evaluator. With students, initiated a crowd-funded project on signal processing, raising \$7500.

Shanon Reckinger and Ryan Munden

Jointly published “A Complete Redesign of Fundamentals of Engineering Course using Backward Design Methodology,” First Year Engineering Experience Conference Proceedings, August 8-9, 2013.

Presentations

Reckinger, S. M., Aca, B., Pitz, K., “Ocean Circulation in a Rotating Tank: An Outreach Project in Fluid Dynamics,” American Society of Engineering Education Zone 1 Conference, Bridgeport, CT, April 4-5, 2014.



Dr. Reckinger

Reckinger, S. M., Petersen, M., Reckinger, S.J., “Sensitivity of Resolution and Vertical Grid Types on 3D Overflow Simulations using MPAS-Ocean”, February/2014, Ocean Sciences Meeting-Poster, Honolulu, HI

Reckinger, S. M., “Ocean Circulation in a Rotating Tank-An Outreach Project in Fluid Dynamics”, November/2013, APS Meeting, Division of Fluid Dynamics-Talk, Pittsburg, PA

Munden, R. A., Reckinger, S. M., “A Complete Redesign of Fundamentals of Engineering Course using Backward Design Methodology”, First Year Engineering Experience Conference, August/2013, Pittsburg, PA



Dr. Rusu

Amalia Rusu

Co-authored an international conference paper, “A Multilingual Handwriting Approach to CAPTCHA,” with three students. Launched the Computing Education Academy in collaboration with Dr. Wook Sung Yoo (page 12); chair of the IEEE-CT joint chapter of computer Society; Systems, man and Cybernetics; 2014 Women of Innovation Finalist in Academic Innovation and Leadership (see page 3).

Congratulations

to the following juniors and seniors, top students all, who were unanimously approved for induction into Tau Beta Phi, the Engineering honor society. They were honored at a March 14 induction ceremony. Christina Klecker '10, a mechanical engineering grad who spent time in Tanzania and is now on her way to medical school, spoke to the group.

SENIORS:
Slawek Guzierowicz
Richard Kovach
Nicole D’Addio
Margaret Osmulski
Mitchell Bell

JUNIORS:
Kyle Scherer
John Sullivan
Yaroslav Kohut
Tayler Reynolds
Kaitlin Maciejewski

Retirements

Dr. Evangelos (Vagos) Hadjimichael was founding dean of the School of Engineering. He continued in that role for 15 years before stepping down in 2010 to return to the classroom and do research.



Dr. Hadjimichael

In the early 1990s, Dr. Hadjimichael alerted Fairfield University about an opportunity to merge with the 70-year-old Bridgeport Engineering Institute (BEI), and so establish Fairfield’s School of Engineering. This was accomplished in 1994. During Dr. Hadjimichael’s tenure, the School grew from a part-time undergraduate engineering program to several full-time and part-time undergraduate programs. Beginning in 1998, several master’s degree programs were added.

Before taking over as dean of engineering, Dr. Hadjimichael had pursued a 25-year NSF-supported research in theoretical nuclear physics, and served three terms as chair of the Physics Department. In 1987, he held the Elizabeth DeCamp McInerney Endowed Professorship. More recently, Dr. Hadjimichael was honored by his peers with election to the Connecticut Academy of Science and Engineering. In addition to his administrative service, he has published over 50 journal articles in prestigious American and international journals as well as publishing a textbook in nanotechnology.

Dr. Jack Beal, professor of physics, was dean of the School of Engineering from 2010-13, during which time he led the planning for the School’s new program in bioengineering.



Dr. Beal

Prior to his deanship, Dr. Beal taught in the College of Arts and Sciences and held the positions of associate dean, director of science initiatives, and chair of the Department of Physics from 1995-2006. He also served as acting dean of the School of Continuing Education for a year. Dr. Beal has been a dedicated educator of young physics and engineering majors at Fairfield University since 1986.

Throughout his career Dr. Beal has received national and international accolades, having been a visiting research scientist at Massachusetts Institute of Technology and a Senior Fulbright Scholar to Budapest. He has published over 50 reports and articles related to the topics of accelerator physics and fusion

energy. In 1984 he founded Science & Engineering Associates of CT, an organization specializing in advanced technology R & D consulting that he continues to run.

Drs. Hadjimichael and Beal are both retiring with full professor emeritus status.

“The School of Engineering has benefitted from the strong formational leadership of Drs. Hadjimichael and Beal over the past 20 years,” noted Dean Bruce Berdanier. “I feel fortunate to be able to come to Fairfield and to begin building on the foundation that they have established. Certainly they have accomplished much of the hard work that needed to be done to set us on the successful path we are on.”

As Director of the Engineering Laboratories for almost 15 years at Fairfield, Dr. Paul Botosani also taught hundreds of students, first at the Bridgeport Engineering Institute (BEI), and then, for the last 20 years, at Fairfield. He earned his PhD in electrical engineering from the Polytechnic Institute of Bucharest in his native Romania, and spent 10 years at the Bodine Corporation in Bridgeport, where he was a senior controls engineer. He began teaching night classes, primarily in robotics, at BEI at night, and transitioned to Fairfield University in 2000.



Dr. Botosani

“Paul managed all the labs at Fairfield. He was the go-to guy for any and all equipment, and always helped make the decision on what was best to purchase,” noted Dr. Berdanier. “He did that in addition to directing the program in automated manufacturing.”

Dr. Botosani has been a member of the Society of Manufacturing Engineers, the American Society for Engineering Education, and IEEE.

Alumni Profile: William Lynch



William Lynch

There's a certain symmetry between music and math, and for a time Bill Lynch thought his career path would lead to the former. A member of the band and orchestra during his high school days in Stratford, Conn., he was even offered a music scholarship to Syracuse University. But even with the scholarship, "I realized that attending

college was out of the question due to the financial burden it would levy upon both my working parents," he recalled.

Instead, Lynch joined the Navy. His high scores on the entry test earned him a placement in the Navy School of Electronics, after which he was assigned to nuclear submarine duty, where he received additional training in nuclear technology.

"There was no latitude for error onboard a nuclear submarine at sea," he said, an understatement if there ever was one, given that he was on a nuclear sub in the Caribbean during the Cuban Missile Crisis.

After the Navy, Lynch's training, plus his maturity, helped him land a good job in the Optical Technology Division of the Perkin Elmer Corporation in Danbury, Connecticut, and it was then that he enrolled in Bridgeport Engineering Institute (now part of Fairfield University) at night. Earning his BS in electrical engineering took him seven long years, a challenging time he acknowledges he got through with the support of the late William Striebe, the dean of students at BEI, and his colleagues at the Perkin Elmer Corporation.

"The Perkin Elmer Danbury facility was home to the brightest and most innovative scientific, engineering and executive minds gathered throughout the United States," Lynch adds, adding that he often turned to his colleagues for help understanding a particularly difficult subject area.

After 19 years with Perkin Elmer, the company asked Lynch to consider a one-year special assignment with the Lockheed Corporation in California. He did so, and at the same time enrolled in a master's program in engineering management at San Jose State University. Eventually, Lockheed offered him a position that drew upon his Navy-days' knowledge of nuclear technology and his experience in aerospace engineering as a result of his work with Perkin Elmer.

"Following the collapse of the former Soviet Union, the Nunn-Lugar Act was passed by Congress which sought U.S. private industry to undertake the demilitarization and dismantlement of the former Soviet Union's nuclear weapons arsenal," he explained. In his role as vice president of technology, he traveled often to Moscow, coordinating demilitarization planning efforts with the Kurchatov Institute and working with the Ministry for Atomic Energy of the Russian Federation, which oversees civil and military nuclear reactor development and management of nuclear material for Russia's nuclear weapons program.

In 1991, Lynch was invited to join the Stanford University Center For International Security and Arms Control, a Stanford University think tank founded by Dr. William Perry, President Bill Clinton's secretary of defense. "A typical session these days might be about Iran. For example, why do they need a plutonium production reactor when they are insisting their nuclear generation is only for fuel?" he explains.

After electing early retirement from Lockheed in 2005, Lynch and his wife, Phyllis, realized their dream of living in Florence, Italy, for a time. He then founded IDEX, a private technology consulting business specializing in optic imaging technologies and Free Space Optical (FSO) Adaptive Optics Laser Communications, upon their return to California. And in his spare time, he co-authored a book, *Dennis Brain: A Life in Music*, about the British horn player.

Referring to his college years, Lynch is grateful for the support that helped him succeed. "I needed guidance, a mentor," he acknowledges. "I'm very grateful for the encouragement I was given to move forward."

A Visit from Cameroon

The Catholic University of Cameroon (CATUC) is a liberal arts university with three schools, founded in 2007 shortly after a new law allowed the establishment of private universities in that country. It was there that Associate Dean Bill Taylor spent a Fulbright semester in 2012, helping to guide the development of their School of Engineering, which is just one of two in the country. In October 2012, he gathered hundreds of engineering books and extra computer equipment from Fairfield's School of Engineering to help stock the library there. (The materials arrived safely in Cameroon – 15 months later!) And this past March, he played host to CATUC's senior vice president for academic affairs, Dr. Paul Nkwi, who spent time at Fairfield in between conferences in Albuquerque, N.M. and Princeton, N.J.

Dr. Nkwi notes that CATUC is extremely grateful for the materials sent to Cameroon from Fairfield's School of Engineering. "A university without a library is not a university," says Dr. Nkwi. "When the Catholic bishops asked me to chair this concern, having a library was my priority. These books cover some of the critical areas our students study." Lectures at the university are all done using Powerpoint, he explains; professors need the books to prepare their lessons, and students depend upon library books because they can't afford to buy their own.

What would be ideal for CATUC, and indeed for all universities in developing countries, he says, would be to improve connectivity between libraries, so that professors and students can access digital materials from libraries throughout the world. Fiber optic cable has come to Cameroon, but connecting to the network is still very expensive for the fledgling university.

Other challenges for the university include hiring and retaining quality faculty, the acquisition of technical equipment for training, and establishing partnerships with industry so students can have internships.

Dr. Nkwi was in the U.S. to fulfill the exchange between Fairfield University and CATUC, as outlined by the Fulbright agreement. He spent time teaching, meeting faculty, and exploring the extent to which the two schools can further student and/or faculty exchange. "CATUC is becoming more visible outside of the country, and that is so important," says Dr. Nkwi.



Partners and friends Drs. Paul Nkwi and Bill Taylor

Fairfield School of Engineering 2014 Strategic Plan

- Vision** As an integral component of a comprehensive Jesuit university, the School of Engineering is committed to providing a student-oriented classroom and laboratory environment enhanced by research that enables graduates to become leaders in the quest to solve society's greatest challenges in service to others.
- Mission** The Fairfield University School of Engineering is dedicated to providing quality educational opportunities in engineering and computer science to a diverse student population. The School emphasizes whole-person development (*cura personalis*) through its integration of expertise in innovative technical areas with a strong liberal arts core.
- Values** The School is devoted to the success of its students. This commitment is seen in the school's dedication to teaching and mentoring provided by faculty, staff and student peers. Through our Ignatian pedagogy, School of Engineering students are constantly challenged to reflect, analyze, and ask "why" as they seek bigger answers to address local and global issues.
- Our Goals**
 - I. Expand Student Engagement
 - II. Structure Appropriate Academic Programs and Processes
 - III. Identify, Develop and Promote Sustainable Scholarship
 - IV. Operate a Comprehensive Program of Assessment, Evaluation and Continuous Improvement
 - V. Develop an Organized Program to Market the School

Summer 2014

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High School Students at Computing Education Academy

Last fall, the School of Engineering launched a Saturday program to excite students from high schools in Bridgeport about the promise of engineering.

The Computing Education Academy (CEA) runs for 24 Saturdays during the 2013-14 academic school year, and is attended by 20 high school sophomores and juniors selected from the Bridgeport Public Schools and the Diocese of Bridgeport. Another 20 will begin in fall 2014.

The goal: To get young students excited about and interested in careers in computing and software engineering.

It's also important to establish a fun environment, according to Dr. Amalia Rusu, associate professor of software engineering and CEA co-director. "During the first semester, students were exposed to key computing concepts and web design through hands-on team projects," she said. "For second semester, the participants will build their computer programming skills and work on mobile apps teamed with college students."

Funded by grants from various corporate organizations, including ASML and the United Illuminating Company, CEA offers students the opportunity to work in teams and ensures a good

connection with professional practice and actual applications of computational thinking.

"High school coordinators from the Bridgeport schools and the Diocese of Bridgeport worked with the School of Engineering to recruit great students," said Dr. Wook-Sung Yoo, CEA co-director and chair of the Software Engineering Department.

