



University of San Diego

SCHOOL OF BUSINESS
ADMINISTRATION
AND ENGINEERING

ENGINEERING INSIGHTS

May 2003
Editor: Kathleen Kramer

Volume VII, Issue I
Assistant Editor: Bernadette Maldonado

Engineering Open House is May 8

On **Thursday, May 8, 1:00 to 4:30 pm**, engineering students will be displaying EE senior projects, presenting ISE senior projects, and demonstrating the freshmen "NIFTY" projects on the second floor of Loma. Alumni are warmly invited and interested members of the public are welcome.

From 2:30pm-4:30pm in L206 and L207, EE seniors will present results from semester one of a two semester capstone project. All presentations are in **an open poster session and demonstration format**. Senior EE Design Projects include:

- A voltage-controlled window tinting system
- An automated system to measure and analyze electromyogram signals
- A system to track and display location and arrival information for campus trams
- A 222 MHz Beacon transmitting Morse code and meeting FCC requirements
- Automated Basketball Return
- Vocoder system for simulating and analyzing effects of voice coding schemes
- Control system allowing semi-autonomous flight of model plane

Starting at 1:00pm in L205 & 206, freshmen will be showing off the results of their work designing their NIFTY projects including working models of:

- A gumball machine
- A bottle opener/pourer
- An aerial lift drawbridge
- A catapult
- A coast guard rescue helicopter
- An envelope sealer
- A ski lift
- An automated bar tender machine
- An underground parking structure

From 2:30pm-3:30pm in L209, ISE Senior Design presentations include two projects: Dispatching Technicians for UPS and Estimating Route Mileage for UPS. For each project, ISE Seniors collaborated with local representatives from UPS.

Please contact the USD Engineering Department at 619-260-4627 for more information.

In this issue of Engineering Insights:

	<i>page</i>
<i>Engineering Spring Open House.....</i>	<i>1</i>
<i>Electrical Engineering Advisory Board Gets Involved with EE Seniors</i>	<i>1</i>
<i>Working for the Defense of Our Country</i>	<i>2</i>
<i>Mechanical Engineering – Starting The New Program.....</i>	<i>3</i>
<i>Engineering Happenings.....</i>	<i>4</i>
<i>Faculty Happenings.....</i>	<i>4</i>
<i>Alumni Survey Involves Record Number of Alums</i>	<i>5</i>
<i>Class of 2003.....</i>	<i>6</i>
<i>Alumni News.....</i>	<i>6</i>
<i>USD Engineering Program Objectives</i>	<i>8</i>

EEAB Increases Industry Involvement with Student Projects

The Electrical Engineering Advisory Board (EEAB) has worked hard this year to enhance the capstone design experience for the EE majors. This year the format of the EE projects was changed to include competitive proposals. EEAB members from SAIC, AMCC, Sun Microsystems, Silicon Wave, Copper Mountain, ViaSat, and Trellisware were actively involved in the review process of initial senior project proposals – board members read proposals and or attended student presentations before providing detailed comments to help instructors select which projects would be allowed to continue to completion.

Several EEAB members also got involved directly with the students mentoring projects or as guest lecturers on professional and design topics for the capstone design course. Topics covered by EEAB included: use and design of printed circuit boards, top-down design techniques, FPGA design methods, and patent issues. Chuck Pateros, Chair of the EEAB, is mentoring an EE project on voice coding. Don Reed, EEAB member, has mentored two previous projects on communication systems for use at SAIC.

Working for the Defense of Our Country

Recent events have emphasized the strength and quality of the US armed forces. USD Engineering alumni are involved in our nation's defense both as members of our armed forces and as engineers working to develop and improve the capabilities of our defense technology.

USD Engineering alumni that are currently active military include members from our first class in 1991 (Roy Raphael, serving as Combat Systems Officer on the USS Peleliu) up through the class of 2003 (Jeffery Lavery, serving as Gunnery officer aboard the USS Shiloh).



Roy Raphael ('91) is serving aboard the USS Peleliu

Most of the USD Engineering alumni in the military serve in the Navy, but we also have had graduates become officers in the Marines, and, more recently, some have become officers in the Air Force. USD Engineering records indicate the following alumni are currently serving in the military: Travis Amrine, James Cena, Brandon Decker, Suzanna Denton, Emmanuel Dulay, Juan Elizarraras, Daniel Ettlich, Donald Jenkins, Jeffery Lavery, Thomas Mack, Ron Montehermoso, Roy Raphael, Nathan Schneider, Zaldy Valenzuela, and Adam Whalen.

Numerous USD engineering alumni are working on military and defense technology at companies and government facilities including SPAWAR, Northrop Grumman, Raytheon, SAIC, Orincon, and ViaSat. Some of these alums have provided us with short descriptions of their work:

Alcino Azevedo ('02) is a software engineer at Orincon Defense Inc. where he is developing a Level 2 Fusion (groups of targets) tracking program.

Amanda Bishop ('01) is a digital design engineer currently responsible for 3 field-programmable gate arrays (FPGAs) in the Comanche helicopter CNI (communication, navigation, and identification) system at Northrop Grumman Space Technology.

Mark Heffernan ('01) works on the Northrop Grumman Global Hawk Payloads Team which is responsible for the sensors on the aircraft including a synthetic aperture radar and the EO/IR telescopic camera. He is responsible for the non-volatile flash memory recorder on the aircraft, coordinates and oversees payload flight testing at Edwards Air Force Base, and manages the 12TB database used to receive and store all Global Hawk imagery.

Estrellina Pacis ('02) is an engineering manager at SPAWAR currently transferring and testing Obstacle Detection/Obstacle Avoidance (OD/OA) technologies on robotic test platforms for ODOA integration on deployed small mobile robots for multiple uses, such as mine detection, surveillance, and chemical sensing.

Michella Reyes ('01) is involved in the digital design of the Modernized Navstar Security Algorithm (MNSA) which is the encryption engine for the new Military code (M-code) for Global Positioning Systems with the Navigation, Systems & Knowledge Engineering division at SAIC. The first satellite launch with M-code is scheduled for next year



Jeffery Lavery ('03) is serving aboard the USS Shiloh

“Defense” cont’d

Chris Smith ('02) is working as a digital design engineer responsible for the Low Latency Signal Processor Module in the F/A-22 Raptor fighter jet CNI (communication, navigation, and identification) system at Northrop Grumman Space Technology. The F/A-22 is currently in production.

Michael Spencer ('02) is an engineer at the Command and Control Department at Spawar Systems Center - San Diego (SSC-SD). (Their slogan: Dominate the Battlespace) As a member of the Tactical Systems Integration and Interoperability division at SSC-SD, he partici-

pates in evaluating the Joint Tactical Information Distribution System (JTIDS) and Multifunctional Information Distribution System (MIDS) tactical data radios. These radios are used to form the Link-16 network for the distribution of the Tactical Data Information Link (TADIL) J series of messages. They are currently used on F/A-18C/D aircraft (MIDS) as well as the F-14D, E-2C and Several Navy Surface ships (JTIDS). The lab is unique in that it allows for the simulation of tactical networks both using simulation over LAN, using the radios in a special RF Propagation Simulator or through actual live communications.

Mechanical Engineering Approved by University

At the Board of Trustees meeting on April 30, Mechanical Engineering (ME) was approved as the third engineering program to be offered at USD. As is the case with the two current USD engineering programs, the USD Mechanical Engineering Program will be a full-time, comprehensive undergraduate course of study with about 150 semester-units leading to both a Bachelor of Science degree and a Bachelor of Arts degree (BS/BA) in mechanical engineering. ME is the second largest field of engineering (after Electrical Engineering) nationally.

The approval process started with a feasibility/marketing study in the Summer of 2002 as a student project in a graduate business course taught by the late Dr. John Ronchetto. In Fall, 2002 a team of Engineering Faculty prepared a preliminary proposal for the new ME program. In Fall, 2003, development of the program continued under the leadership of visiting ME faculty member Professor Nihad Hussain. The proposed ME curriculum was approved by the Department of Engineering and the School of Business Administration and a revised proposal for the new program was taken to the USD administration. This new proposal was unanimously approved by the President's Cabinet on March 18, 2003. Final approval by the Trustees came April 30, 2003.

Timing has been ideal. With Physics moving into the new Shiley Science & Technology Center, space in Loma Hall has opened up.

The two Physics laboratories on the third floor of Loma and the Physics research areas in the Loma basement will be converted into laboratories for the program. Additional faculty and administrative space will also be located on the third floor.

In the proposal, an initial class of freshman was scheduled to begin in Fall 2003. As it appears to be the case with all engineering programs at USD, as soon as a possible new program is announced, there are students who want to be in it. About 6-8 current freshman have decided to be the initial ME class & are scheduled to graduate in December, 2006. An accreditation visit will take place at the earliest allowable opportunity thereafter with the Department strongly committed to ensuring that all graduates are covered by EAC/ABET accreditation.

The Department is nearing the end of its search process to hire two lead ME faculty to start in Fall, 2003. It is expected that additional faculty will be hired yearly with an initial target of five ME faculty and two additional staff by 2006.

The addition of the Mechanical Engineering Program was one more essential step in assuring the continued growth of the USD Engineering Programs and progress towards our next target, the USD School of Engineering.

Recent Engineering Happenings

The Spring Engineering Convocation was held on March 27 and featured alumnus Ricardo Valerdi with his talk "Tales from the Trenches" that covered the USD Engineering experience, doing research, and his current work toward a PhD at the University of Southern California.



*Featured Spring Engineering Convocation
Speaker, Ricardo Valerdi ('00)*

The next Engineering Convocation is scheduled for Thursday, October 21, 2003. For more information, please contact Bernadette Maldonado at bmaldonado@sandiego.edu.

Faculty advisor Dr. Mikaya Lumori and branch chair Matt Dominick report that the USD student branch of **IEEE** hosted the Southwest Area Meeting and Technical Paper Competition. Seniors Dalia Tawy and Sami Alsaialy won third place (and \$200) in the technical competition for their paper, "Introduction to LabVIEW". The paper covered a research project done under the supervision of Dr. Susan Lord.

("Engineering Happenings" cont'd on pg. 5)

Faculty Happenings

Dr. Bradley Chase has received his second Navy/ASEE Summer Faculty Fellowship and will be serving as a Research Scientist in the Cognitive Performance Lab at the Naval Health Research Center (NHRC). The work concerns the tracking of eye movement behaviors, the construction of neural network models of those behaviors, and implementation of adaptive displays that integrate the models as measures of operator cognitive state.

Dr. Ernest Kim has been on a leave of absence from USD during the 2002-03 academic year. He has been working as the Principal RF Engineer at Lightwave Solutions, Inc, developing a low-cost high-performance broadband Cable TV optical transmitter. He has enjoyed the exciting industry work and is looking forward to returning to teaching this Fall.

Dr. Kathleen Kramer and her husband, Mr. Jorge Geremia ('95), announce the arrival of their first child, Duncan Antonio Geremia. Duncan was born on March 28, 2003. Extensive pictures of Duncan can be seen at his website: <http://home.san.rr.com/kramergeremia>.

Other spring activities for Dr. Kramer included an award as "Outstanding Engineering Educator" at the San Diego National Engineers Week banquet. She also made an appearance on the game show, "Who Wants to Be a Millionaire?" that was scheduled to air the week of May 5.



Dr. Kathleen Kramer's new son, Duncan

("Faculty Happenings" cont'd on pg. 5)

“Engineering Happenings” cont’d

Faculty advisor Dr. Thomas A. Kanneman reports that the USD chapter of **Eta Kappa Nu** (HKN) (the national electrical engineering honor society) initiated eight new members at initiations held on December 11, 2002 and April 29, 2003: Joseph Church, Thomas Davis, Melanie L. Higa, Leonel Ibarra, Derek R. Maxwell, Brian Momeyer, Aaron Unis, and Carlos R. Williams. Current officers of HKN include: Samuel J. Stewart, Carlos R. Williams, Leonel Ibarra, Aaron Unis, Dalia M. Tawy, and Markos Kalemkeris.

Dr. Rick Olson will be taking a one-semester sabbatical during the 2003-04 academic year.

Faculty advisor Dr. Leonard Perry reports that the 12th annual **Walk-on-Water** (WoW) competition was the biggest yet with more entries than ever before. The event was held on December 7 – the first time WoW has ever been held in the Fall semester. USD’s WoW competition has been spreading to other localities – recently the Edinburgh Science Festival (in Scotland!) opened festivities with a competition modeled after USD’s. See <http://www.wired.com/news/medtech/0,1286,58457,00.html> for more on the Scottish event.

“Faculty Happenings” cont’d

Dr. Susan Lord is planning on spending her sabbatical during the 2003-2004 school year doing research with the Photonics and RF Technology Branch (Code 2825) at SPAWAR Systems Center on Point Loma. She will be investigating fiber Bragg grating arrays for use in fiber-based optical domain RF filtering. Dr. Lord looks forward to catching up with the USD alums who are working SPAWAR during her time there.

Dr. Thomas F. Schubert was awarded a recognition-based university professorship for the 2002-03 academic year in recognition of “outstanding, balanced, career contributions supporting the mission and goals of the University.”



Dr. Thomas F. Schubert, Jr. Receives University Professorship Award from USD President Alice B. Hayes

Huge Response from Alumni to Survey

On February 1, USD Engineering launched its second ever alumni survey in an effort to get feedback on what our programs are doing well and how we could improve to better serve our constituents.

Hoping for at least a 20% response rate, the survey was launched using Educational Benchmarks, Inc (EBI) web-enabled system that provides ongoing results summaries and will allow us to compare our results relative to other engineering schools.

In an effort to increase alumni response, USD Engineering offered shirts to the first 30 respondents to complete the survey. The results were phenomenal; over 20 students had responded by the first working day the survey was available. Over 77% of the alumni solicited via the web-enabled system have completed the survey. We are thrilled by this result and confident that it is among the highest response rates of any school participating in EBI’s engineering alumni surveys.

Any alumnus who would like to add to our response rate correct
e-mail address before May 31 and be added to as a survey participant.

Class of 2003

The class of 2003 for USD Engineering includes 17 electrical engineers, 3 of whom are taking advantage of the opportunity to complete their degree in less than the standard time and 7 industrial & systems engineers, 5 of whom are completing their degrees early. Several of them have already made plans or have started jobs or graduate school:

- Nicholas Bingham (ISE) is pursuing his MBA at Gonzaga University.
- Daniel Brennan (EE) is working as a Global Infrastructure Services IT Project Leader for Power Systems Division of General Electric in Atlanta, GA. He is participating in a program that allows him to rotate to different divisions and different locations.
- Howard Diaz (EE) will be commissioned as an Ensign in the U.S. Navy. In June, he will be reporting aboard the USS CUSHING based in Yokosuka, Japan.
- Scott Feyka (EE) is currently enrolled in graduate school at UC Riverside in the MSME program with research topics in heat transfer/fluid mechanics. He expects to graduate in Winter 2005.
- Melanie Higa (EE) will be working at NAVAIR at Pt. Mugu will be working as an electronics engineer. Melanie will be graduating this summer.
- Jeffrey Lavery (EE) was commissioned as an officer in the Navy in December 2002. He is an Ensign stationed on the USS Shiloh, which just returned from the Persian Gulf. He reported to his ship in January while it was still in the Persian Gulf. He is the Gunnery Officer, which involves being responsible for selected number of weapon systems.
- Andrew Putnam (EE) is going to continue his work on missile defense systems with Raytheon through December, then attend graduate school at the University of Washington in Seattle. He is on the Ph.D. track, and hopes to obtain his degree by the end of 2007. He will be studying in the department of Computer Science and Engineering (CSE). His focus will be computer architecture and distributed computing. He was accepted into Raytheon's Advanced Degree Program, which will allow him to go to school as if it were my full-time job. Andrew is the first person from Raytheon in San Diego to get accepted into the program, and the only one in the nation to be accepted for Ph.D. study. Andrew will be

graduating from USD with a triple major: Electrical Engineering, Computer Science, and Physics.

- Miguel Sosa (ISE) spent the spring semester studying in Austria.
- Dalia Tawy (EE) is planning on attending graduate school in Fall 2004 at either UCSD or SDSU to get a Masters degree. If she likes graduate school, she might go for PHD, too! Her graduate studies will be in either biomedical or computer engineering. She is currently working as a Certification Engineer at the Compliance Department at Solar Turbines and hopes this will transition to a full time position upon her graduation from USD. Dalia will be graduating this summer.
- David Trusheim (EE) is a Research Engineer, working in the Technology Research Group of SAIC. He is currently working on two projects: Outdoor Sensor Placement and a Radar/GPS project. Both of these projects allow him to apply knowledge from courses in DSP, controls, and communications. He also has had to learn a bit more about biology topics (DNA, RNA) to keep up to speed on some of the bioengineering projects.
- Carlos Williams (EE) is a Lieutenant in the Navy. Following graduation, he will be returning to the fleet. Carlos will be graduating this summer.

Alumni News

Class of 1991

LCDR Roy Raphael is stationed aboard the USS Peleliu, an Amphibious Assault Ship, as Combat Systems Officer.

Class of 1994

Daniel Ettlich and his wife, Jenna, are pleased to announce the birth of their daughter, Faith Christine Ettlich, born on January 2nd, 2003.



Faith Christine Ettlich, Daughter of Daniel Ettlich ('94)

("Alumni News cont'd on pg. 7)

Currently stationed at the ROTC unit at the University of Arizona, it looks like the Ettlich family will be moving to Hawaii in March 2004. Daniel expects to be working at the Pearl Harbor Naval Shipyard.

Class of 1999

Bryan Espiritu is currently working as a verification engineer for the Catalyst 6500 product line with Cisco Systems in San Jose. Bryan married Kathlea Magbual at Camp John Hay, Baguio City, Philippines on November 28, 2002. Bryan met Kathlea while vacationing in the Philippines in May of 2001. Bryan and Kathlea’s family includes their golden retriever, Brandon.

LTJG Zaldy Valenzuela is stationed aboard the USS Denver, an Amphibious Transport Dock (LPD). He expects to leave the Navy next year. He married his college sweetheart, Joanna Ellis, on May 4, 2002.



Bryan Espiritu ('99) and his new wife, Kathlea Magbual

Class of 2000

Edward Kaen is working with his father doing electrical engineering projects in VSAT, wireless local loop, Internet POP and long distance projects.

Daniel Empeno is an engineering contractor for SPAWAR, working in the MIDS program.

Soren Solari is attending graduate school at UCSD in Intelligent systems and control.

Ricardo Valerdi is entering the second year of the PhD program in Industrial & Systems Engineering at the University of Southern California. He is also a researcher at the Center for Software Engineering at USC. This summer he will be working at the Economic and Market Analysis Center at the Aerospace Corporation (a federally funded R&D Center) in Los Angeles.

Class of 2001

Amanda Bishop is a digital design engineer at Northrop Grumman in San Diego, CA.

James Cena is continuing his work in the Navy, just starting Nuclear Power school, and, of course, spends most of his free time studying. He and his wife are expecting their first child in November.

Suzanna Denton will finish up her Navy commitment this winter and hopes to attend graduate school in Electrical Engineering with an emphasis on Signal and Image processing at either UCI or UCSD.

Mark Heffernan graduated from SDSU with an MSBA in Information Decision Systems in May 2002 and began working in June 2002 at Northrop Grumman in Rancho Bernardo supporting their Global Hawk system.

“Alumni News” continued on pg. 8)

The Educational Objectives of the USD Industrial & Systems Program are to develop graduates who:

1. Have a sound foundation in mathematics, basic sciences and engineering principles, and the ability to apply this knowledge to engineering problems.
2. Can apply the fundamental concepts and skills of their engineering discipline to design appropriate solutions to technical, and organizational problems.
3. Effectively communicate technical and non-technical ideas orally and in writing.
4. Can participate on engineering teams by taking responsibility for their assignments and coordinating their work with their colleagues.
5. Are able to draw on a liberal arts background in their professional careers and personal endeavors.

Class of 2002

Tony Mireles and his wife, Robin, welcomed their son, Christian Antonio Mireles, on April 17, 2003. More pictures are available at www.mireles.us.



Tony Mireles ('02) with Robin and Christian Mireles

Currently, Tony is working at PAR Government Systems. PAR is applying for a patent on a new camera system that would list Tony as one of four inventors.

John Duca is working as an Electrical Engineer designing communications systems at Raytheon in El Segundo, CA.

Emmanuel (Noel) Dulay is currently in Dayton, OH as for his tour of duty with the US Air Force.

Jacalyn Thomas is an electrical engineer at Nassco in San Diego, CA.

Pedro Usma is working as an Electrical Engineer at SAIC in San Diego, CA.

The educational objectives of the USD Electrical Engineering Program are to develop graduates who:

1. Are able to apply their electrical engineering and broad academic backgrounds in their professional and personal endeavors.
2. Can adapt to evolving job responsibilities.
3. Can contribute effectively on a team and provide leadership in their professional careers.



Engineering Programs
5998 Alcalá Park
San Diego, CA 92110
SERVICE ADDRESS REQUESTED