

Bearings

Mechanical Engineering
Department Newsletter

Fall/Winter 2004

Castillo is New Engineering Dean

"I really appreciated my undergraduate experience at New Mexico State University," Dr. Steven Castillo, new dean of the College of Engineering declares, "which led me back here to teach and to the desire to take a part in moving NMSU's engineering vision forward, to build on our strengths to become one of the premiere engineering colleges in the United States."

In his role as dean of the College of Engineering, Castillo sees that challenge involving multiple fronts: retention and recruitment of students, faculty and staff; development of interdisciplinary research between engineering departments, NMSU colleges, and other universities; and enriching faculty and staff.

Since the start of his tenure July 1, Dean Castillo has aggressively sought to involve the College of Engineering community in this vision through direct meetings, increased internal communication and publications, and by designing a comprehensive and

(continued on page 2)



Steven Castillo

E-Council Plans Spirited Events

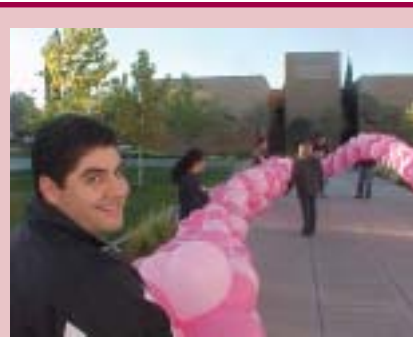
Ambitious plans are in progress to rekindle the energy of past College of Engineering events starting with E-Week, Feb. 20-26, followed by a revival of College Cup on March 4.

The E-Council, led by new officers Cipriano Duran and Mohammad Ghessemi, is determined to organize a slate of activities to involve all of the C of E community. They will be meeting in early December with administration members to finalize the program schedule.

This year NMSU's E-Week coincides with the national celebration.

The College Cup, based on a tradition of friendly rivalry between the College of Engineering and the College of Agriculture and Home Economics, will feature "every silly competitive event you can think of," Cipriano claims. "Pig chasing, chicken chasing, sack races. The finale is a Tug-O-War over a pile of compost (donated by the C of A&HE). First in line on either side will be the respective deans, followed by department heads, then faculty, staff and students."

Classes will end at 1:00 p.m. so all will be free to join the festivities. Special guests, sponsors and media will also attend.



ASME members responded to the College of Health and Social Sciences request to produce a pink ribbon (of balloons), the symbol for Breast Cancer Awareness. The occasion was a first-time event in conjunction with the national observance of October as Breast Cancer Awareness month. Club volunteers worked well into the night preparing the balloons and were back on the scene the next morning, Friday, October 8 to raise the mammoth ribbon of pink balloons.

Pink Balloons: A Lot of Hot Air and a Long Night Benefit Cancer Awareness Event

Their creation drew plenty of attention to the event.

According to Dr. Pam Schultz, one of the event organizers, the idea was proposed by participants of the Sisters by Chance Cancer Support Group that meets at

(continued on page 3)



ASME Volunteers: (left to right: Justin Lambeeth, Sherry Stout, Lindsay Gilbert, Frank Garcia, Crystal Rodriguez, unknown, Kristen Bierck, Miguel Roybal, Jady King, Ralph Lucero.

Allen Joins ME Faculty

New ME professor Dr. James Allen has signed on for a capstone project, is mentoring Crimson scholars, planning joint research with Dr. Shashikanth and continuing his research on vortex rings and flight characterization.

A native Australian, Allen came to the United States after completing his Ph.D. at the University of Melbourne with special emphasis on fluid mechanics.

The water channel constructed by former department member Gregory Reynolds was a decisive attraction for Allen. The only one in the southwest, and one of the few in the nation, this lab facility will be an excellent support for Allen's interests, and is pivotal

(continued on page 2)



Dr. James Allen and students Humberto Evans and Zachary Smith plan water channel experiments. (Photo by Darren Phillips, University Communications)

Armendariz , Paz Continue "Flying Aggie" Tradition

Seniors Aaron Paz and Brandon Armendariz are continuing ME's representation in NASA's Reduced Gravity Student Flight Opportunities Program which began with Omar Morales on the first Flying Aggies team in 2001. Fellow ME James Childress joined the following year. This is the fifth continuous year NMSU has joined the competition.

The thrill of weightless flight might be the highlight but most of the program activity takes place locally as the teams propose, design and build a microgravity related experiment. Proposal acceptance guarantees the team will perform their experiments in an actual weightless environment at the Johnson Space Flight Center in Houston in the spring.

Aaron welcomes being branded as a "space nerd." This is his third season with the team, the second for Brandon. He and Brandon are turning their aerospace interest

into their senior capstone project. Team members are a multi-disciplinary group chosen for their interest in microgravity and

simple project of modifying existing splicers for repairing and maintaining fiber optic cables to an ambitious "Armageddon" venture researching asteroid deflection techniques. According to expert Dr. Dan Durda, contacted by Aaron, this has not previously been investigated. Though the odds are slight, a nuclear explosion could cause a change in asteroid course endangering our planet. The Flying Aggies propose to study methods to deflect the asteroid's new course. They'd employ ice cubes in a vacuum, and a heat lamp to calibrate the



Aaron Paz, left and Brandon Armendariz experience the exhilaration of weightlessness as "Flying Aggies" at NASA's Johnson Space Center. (NASA photos)

related NASA projects.

This year's team has submitted four experiment proposals to NASA, three new ones and one continuation. NASA will evaluate the proposals and notify qualifying teams by December 7.

New proposals range from a fairly

reaction on a small scale.

Another innovative challenge proposed is a solar sail to propel the spacecraft. The team's focus is a design which could be assembled in space.

Continuation proposals also submitted include experiments on the problem of deploying light weight structures in space.

Once accepted the team will have an intensive two month work period to produce their experiment(s) in time for demonstration in March or April.

Aaron has immersed himself in aerospace for the past four years, participating in co-ops at WSTF and other NASA projects. He's worked at Johnson Space Center on a drill for exploring Mars, at Neutral Buoyancy Laboratory as a diver's assistant training astronauts in the world's largest indoor pool, and most recently at NASA's Jet Propulsion Laboratory participating in architectural design for the Mars mission. He definitely intends a career in aerospace. Whether after completing a B.S. or M.S. he has not yet decided.

"An unforgettable experience," Brandon said of the event last spring. "A great project for engineering as a team. I learned a lot about communication skills as well as applying engineering skills. It was interesting to see the variety of skills on the team and how they inter-related."

Brandon plans to go on for a MS in engineering but has not narrowed his interest beyond considering aerospace and fluid mechanics. Research labs, he explained, such as Sandia National Lab where he co-oped, require a masters for employment.

Allen

(continued from page 1)

in the capstone project he is mentoring. The team is constructing a large hummingbird that will demonstrate hovering principles when tested in the water channel. The project is a natural outgrowth of Allen's professional interest in aerodynamics as researched through the efficiencies and characteristics of bird flight.

His professional history in the United States includes post-doctoral research at Georgia Tech; research scientist at the Gas Dynamics Laboratory, Princeton; and as hydrodynamicist for Ocean Power Technologies in New Jersey. He also spent a year as visiting research scientist at University of Poitiers, France.

His teaching experience goes back through to graduate work. Teaching is a component of the doctoral program in the Australian system, he explains, though primary focus is on research. This semester he is teaching Introduction to Fluid Mechanics. He will present Compressible Flow in the spring.

Castillo

(continued from page 1)

consistent marketing image.

Castillo points to the relevance of the College of Engineering in what university president Michael Martin terms 'clusters of expertise': water, energy, information sciences, and border studies. According to the dean, "We are seeking funding for a new water quality institute to address pressing needs in the state, and leading the drive to place NMSU at the forefront of energy research and development through an initiative to create an NMSU Center of Energy." An Aerospace Engineering program is also scheduled to begin in 2005.

NMSU's unique mix of students and a student-centered education with strong faculty, Castillo believes, produces and will continue to produce high caliber graduates.

A member of the faculty since 1987, Castillo earned his B.S. in electrical engineering here. M.S. and Ph.D. degrees from the University of Illinois followed. His research focuses on computational electromagnetics and high-performance computing.

Dean Castillo received the prestigious NSF Young Investigator Award in 1991, and was named this year as an NMSU Regent's Professor.

Progress in Robotics Lab

Student researchers are exploring the workings of new robotics equipment that could be adapted to aerospace needs. In separate projects directed by Dr. Ma, graduate students from ME and EE are developing technologies in dynamics and controls for applications to space robotics and satellite on-orbit servicing.

One project develops systematic and practical techniques for identifying key parameters of contact-dynamics models from physical tests of complicated contact objects. The large white robot generates prescribed 3D contact motions. The fixture on the bottom (below Dr. Ma's hands) has specially designed contact interfaces; it is equipped with 6-axis force-moment sensors and 3-axis accelerometers. Not visible in the photo is a high-precision 3D motion tracking system that senses the dynamic responses of contact motions. This developing technology will be an innovation for the process of creating or tuning contact-dynamics models of dynamic systems. Practical applications include, for



Dr. Ma explains workings of the robotic system to Raul Reveles and Xiumin Diao. (Photo by Darren Phillips, University Communications)



Raul Reveles and Brian Rajada, EE graduate students, are training the mobile robot to track an object.

example, satellite on-orbit servicing, vehicle contact analysis, robotic assembly tasks, and micro-process manufacturing. Two graduate students are currently working on this project.

The brightly colored vehicle at left is an experimental model for testing robotic control strategies for autonomous rendezvous and capture of a moving target. The mobile robot is equipped with multiple sensor

systems that help it to search, track, and capture a nearby moving target. It could be integral to the challenging space robotics problem of capturing and servicing a satellite or space station while in orbit. At the present research stage, the controller of the robot is still immature. Unable to discriminate, it will follow any moving object in front of it until a different object catches its attention. Two graduate students (co-supervised by Dr. Prasad of EE) are currently working on a project aimed at improving the tracking control of the robot using the technology of fuzzy-neural control with self-training capability.

Representatives from AFRL, Sandia, and private companies have visited the lab. Some of them have expressed interests in developing collaborative research. Dr. Ma is currently collaborating with several professors from the Departments of Electrical Engineering and Mathematics doing robotics-related research in the lab.

Breastival

(continued from page 1)

the NMSU Department of Nursing. They didn't know what to expect from the first-time effort. The event, entitled Cancer Fest and Breastival, was modeled on Johns Hopkins' original breastival. Interest was widespread and drew over 200 participants. Over 30 tables provided information from the New Mexico Department of Health, the Susan G. Kommen Foundation and the Health Professionals program of Gadsden High School and others. The Student Health Center offered free breast, testicular, and skin cancer screenings. There was a student poster contest and a raffle.

GRADS

Bachelor of Science

Fall 2003

Agustin Francisco Campos	Jenine Jessica Martinez
Darren Dwayne Davis	Albert Molina Moncada
James Rod Davis	Michael David Owen
John Paul Enriquez	Wayne L. Price
Thomas Adrian Hanson	Anderson Samuel St. Hilaire
Charles Patrick Hutchinson	Gus William Takala
Clarisa Lopez	Jason Bryan Tucker
Noe Marioni	Clem Vasquez
Daniel Jose Martinez	Matthew Andrew Welch

Spring 2004

David Lynn Bolding	Samuel Emmitt Morrow
Alberto Castaneda	Javier Luis Rodriguez
Jason Corral II	Darlene Garcia Santana
Daniel Ray Garcia	Nathan Wesley Schukei
Sergio Luis Gonzalez	David William Seigel
Mathew William Hill	James Forrest Sowell
Elizabeth Marguerite Kee	James Scotti Sullivan
Jaime Heather Matchin	Catherine Elizabeth Watkins
Dustin Williams Morrow	Tyler Wayne Wood
	Francisco Rodrigo Zuch

Master of Science

Fall 2003

Phani Kumar Cheruva	Haris Nagaraj
---------------------	---------------

Spring 2004

Benjamin M. Chandler	Sky Cameron Northup
Reid Albert Driscoll	Michael Edward Reynolds
James Issa Harb	Cale Robertson
Toby Glenn Holden	Humberto Ramon Silva
Andrew Mark Johns	Jose Manuel Tafoya
Wesley Brook Morgan	Joshua David Tamminga
Petra Helena Nedimovic	Christopher Brian Teller
	Praveen Kumar Vaida

Summer 2004

Isaac Eugene Brazil	Ramakrishna Pandiri
Matthew Lloyd Marple	Kyle Matthew Sparks
Jennifer Nicole Padillo	

Meet Some of ME's Doctoral Students

Why go on for a doctorate? According to Dr. Gabe Garcia, most engineers do so to fulfill personal goals and interests. A requirement for college professors, a terminal degree is seldom a criteria for the engineering market place. There's no salary incentive. 'Knowledge consumption' is how one candidate described the impetus.

Oleg Prokopiev

ME's Dr. Igor Sevostianov encouraged his fellow student Oleg Prokopiev to join the Ph.D. program at NMSU, and to work with his team on research into an alternative bone implant material.

Hydroxyapatite, because of its characteristic porosity, has potential as a compatible component in implant material. It has been used, Oleg said, as a filler in small breaks, decreasing the healing time. Elasticity of the material, however, needs to be strengthened. He has been engaged in ultrasonically measuring hydroxyapatite's properties to calculate the elastic constant. Hydroxyapatite is used to form a ceramic-like compound which needs to be sintered slowly. Presently, it takes approximately 48 hours in a conventional oven. The researchers are going to test using a microwave to speed up the process.

Oleg has co-authored a paper on the research which has been accepted by the International Journal of Fracture. He also presented the paper at the 16th Annual Rio Grande Symposium on Advanced Materials and was awarded third place for his accompanying poster.

Oleg has experience in both industrial and academic research. He was an engineer for Vavilov State Optical Institute and Leningrad Nuclear Power Plant, both in Russia. For the two years before coming to NMSU in 2003, he was a research associate at the Atomic Energy Research Institute of the Hungarian Academy of Science. His B.S. and M. S. degrees were awarded by St. Petersburg State Polytechnic University.

There are currently 13 doctoral candidates working and studying with the ME faculty. More will be starting with the spring semester. Their interests cover the range of ME fields. Most will go on to work in the industrial sector.

Naixin Willis

Naixin Willis works with Dr. Vincent Choo on ultrasonic non-destructive testing of composite materials, and TAs for Lab 345, Experimental Methods I.

Research is her primary interest and doctoral study will provide comprehensive knowledge and skills for creative research work whether in a big company or university. The theoretical study Nai is involved with is an assessment of the strength of an engineering structure or composite material as a safety indicator. She uses various wave propagation methods to evaluate defects. This testing process is time consuming and thorough. In some cases, the material is tested point by point. Engineering structures that are plate-like can be subjected to lamb waves, a quicker process that examines line by line. This critical evaluation is essential to maintaining and/or improving level of confidence in the structure's use. For example, we would obviously feel safer flying in a plane that had been tested for structural defects as



Above: Oleg Prokopiev with his award winning poster.



Left: Naixin Willis with Lab 345 students Scott Hightower and Kyle Schueller

Below: Ravi Purandare (2nd left) provided PSL visitors Christy Teufel, Allan Tubbs and Jamie Varni with a tour and explanation of the workings of the water channel.



opposed to one that had not.

Naixin has been the adventurous one in her family, the only one to choose to go further away than the local university for undergraduate study. And after receiving a B.S. and M.S. from Northwest Institute of Light Industry in China and taking additional courses at Zhejiang University, she decided on further study in another country. Education in a different system is a challenging change, she finds. Courses and requirements differ from those in a Chinese institution.

Dr. Choo, she reports, offers abundant guidance and support and has been helpful in introducing her to various educational resources. They regularly meet a couple times a week to discuss her work. He and Dr. Pederson also provided support in arranging her study and work schedule the semester following the birth of her daughter.

For information on ME's graduate program, contact Dr. Gabe Garcia, (505) 646-3501.

Ravi Purandare

Now in his third year of doctoral study, Ravi Purandare was attracted to NMSU by its campus, research facilities and the opportunities available in the ME department.

Ravi worked in industry after completing a B.E. and M.S. at State University of New York at Stony Brook. After a few years he felt the need for the advanced skills and knowledge required for higher level engineering. He is primarily interested in simulation modeling based on mathematical and engineering principles, including applications for aerospace.

He is working with Dr. Ian Leslie on an aero body for monitoring and information gathering in the stratosphere. With grant funding from PSL they are investigating a hybrid of a helium balloon and a 'flying wing' shaped glider. The advantages, Ravi explains, are reduced power requirement, ability to move at relatively slow speed, and loitering capability. "A vehicle of this type could perform many of the functions currently provided by satellites, at much lower cost and sometimes more effectively." The concept of buoyancy-driven locomotion, developed from Archimedes' principle, has already been used for underwater robots. In the case of the aero body, propulsion can be controlled by changing the craft's weight by drawing in and

In addition to fellowships and grants from external programs and foundations, NMSU and the department offer a number of fellowships.

discharging air with a compressor.

Ravi made use of the water channel located in Jett Hall Annex early in the project to ascertain the appropriate aerodynamic and geometric properties of the aero body to use in the mathematical mode.

The goal for his doctoral research is improving the mathematical model and simulating the craft's cyclical motion and power usage. "There are further areas to work on," Ravi said, "optimizing parameters, studying stability range, and designing the control system and its functions."

According to Dennis Zaklan, PSL project officer, "Ravi Purandare was an integral part of a PSL aerodynamic project. He assisted and guided the PSL engineers in determining the lift, drag and stability of the aircraft design. He assisted in all the procedures of the test including determination of testing methods, set-up, testing, and documentation. His expertise enabled the success of the Low Turbulence Water Channel tests."

NSF Program Seeks to Increase Doctoral Candidates

In addition to the usual classes and responsibilities of a master's program, Albert Moncada

meets weekly with a group of engineering students mentored by Dr. Ricardo Jacques as they prepare to apply for doctoral programs. Currently they are finishing up the personal statement requirement after peer critiquing their efforts.

The students are participating in the Bridge to the Doctorate program, a National Science Foundation project. They are provided with a generous living stipend, tuition, supplies, travel money and research allowance.

The students commit to go on for a doctorate.

The support enabled Albert to attend a Society of Experimental Mechanics conference in June on Digital Image Correlation. His master's project under Dr. Conley involves laser examination of the surface of a pyrovalve. One like it might have contributed to the failure of the Mars satellite. His responsibility on the research team has dealt with verifying the use of laser speckles within the digital image correlation software. The technology, he explains, is a non-intrusive method of measuring strain on the surface. He is seriously considering continuing with the digital imaging field as his focus of study and research. He is also interested in biomechanics.

All of the students were involved in the New Mexico Alliance for Minority Participation, NSF's program to increase undergraduate participation of under-represented minorities in the STEM (science, technology, engineering, math) fields. Minority under-



Albert Moncada monitors information recorded from explosions that deform the pyrovalve he is studying.

representation also appears on the doctoral level.

Once accepted, there are support programs for doctoral students. Bridge to the Doctorate will help its participants with in-depth searches, including visit and application fees for three doctoral programs. One of the universities considered must be a member of the New Mexico Alliance for Graduate Education and the Professoriate, a doctoral level NSF program.

In addition to undergraduate participation in New Mexico Alliance for Minority Participation, applicants must be accepted to a full-time master's program and maintain a 3.0 GPA. A second group of Bridge to the Doctorate students will begin in January, including students from the sciences as well as engineering. NSF will evaluate the effectiveness of these two groups before committing to a continuation.

For more information about Bridge to the Doctorate, contact Rose Pena, 646-3211.



ASME ACTIVITIES UPDATE



The annual ASME/Pi Tau Sigma Banquet will be held on December 2 at the new university golf clubhouse, marking the end of another year of service by the group. Volunteer efforts are a focus along with events to welcome new students and increase community among all ME students.

President Miguel Roybal pointed to one new volunteer event as notably successful. ASME volunteers presented a mentoring session for ME 102, Introduction to Mechanical Engineering, which turned into an unofficial orientation with enthusiastic response and questions from the freshmen students.

The group is also selling College of Engineering t-shirts to support the SAE Mini Baja 100th Anniversary competition and event which will be held in Tucson on June 1, featuring the challenge of a 100 mile race.

The societies meet every other Wednesday at 5:30 p.m. in Jett Hall Room 283.

Crimson Scholars Program Offers Research Opportunities

The best known advantage of being a Crimson Scholar is getting to register for classes early. Other privileges are longer length library loan and eligibility for Honors classes. Three ME scholars are enjoying another Crimson Scholar benefit. They have good student jobs. The program supports independent study, research projects and other meaningful work guided by NMSU faculty.

Humberto Evans and Zachary Smith are working on projects with new ME professor Dr. James Allen while Jared Goldsmith works with Dr. Ed Conley.

Challenging work for highly competent students – members must maintain a 3.5 GPA for participation in Crimson Scholars.

Dr. Conley praised the program for the benefits it provides both sides: the faculty researchers need the help; students get more professional experience and better pay than typical work-study jobs. “It takes work for the faculty person to get the students up to speed,”



Above:
Humberto Evans adjusting the soap film set up.

Right:
Dr. Conley explains stress on bone to Jared Goldsmith.



Zachary Smith edits computer code for one of Dr. Allen's projects.

Conley said, “but then they are fast learners, enthusiastic and productive.”

Dr. Allen recruited students when he learned of the program.

Humberto Evans had a choice of projects under Dr. Allen. He wanted what was most challenging. With a major interest in fluid mechanics, Dr. Allen's projects often involve water flow. Humberto is setting up

a “Soap Film Tunnel” to study a shear layer, the interacting interface of two flows of water with different speeds. Once the fine string structure is positioned and tightened for optimum tension to support the bubble of flowing water, a sodium lamp will highlight pressure difference caused by eddies resulting from flow separation. The goal is examining the patterns created by the friction between the different internal flows.

The young researchers work in Jett Hall Annex which houses the water channel, a valuable resource for a wide range of fluid mechanics projects. Dr. Allen spends his time there, too, and is available to guide his students. He involves them beyond the class/lab room time as opportunity presents. For example, Humberto accompanied him to UNM to meet with an expert from Los Alamos to get a sense of how this project applies in the broader research arena.

Meanwhile Zachary Smith, a transfer student from the University of Maryland, is using his familiarity with C++ computer language to edit a driver code for frame grabbing. Zach explains that the photos of fluid flow typically produced by digital cameras are not good enough for accurate depiction due to relatively long time between successive images. His goal is to change the exposure speed between frames to obtain a quality of photo that will allow evaluation of the velocity field of two dimensional flow. The camera will then be used to ascertain the impulse that a vortex ring delivers to a floating sphere. This involves linking at least 2 PC programs with the camera and an experimental set up of a stepper motor driving a piston to produce a vortex ring in a fish tank.

Jared Goldsmith is delighted to have a more interesting, better paying job than the minimum wage ones he's had before. His tasks are calibration and data acquisition in Dr. Conley's study of multi-directional stress on bone implants. Using artificial simulations composed of ceramic and glass materials, femurs with injuries such as those experienced by actual human bones are subjected to walking stress. Results are observed and noted for statistical analysis. The work, supported by Texas Tech Medical Center, is done in collaboration with the medical community and implant manufacturers.

For information about Crimson Scholars, call 646-2542.

NEWS BRIEFS

SUPERCOMPUTER

NMSU has received a \$240,000 grant from NSF to purchase a supercomputer researchers say will help them study everything from how forest fires spread to how plants can be used to absorb heavy metals from contaminated area.

NMSU researchers have had to borrow time on powerful computers at Los Alamos or Sandia Laboratories. Initial users include **Ian Leslie of ME**, Jeanine Cook and Kwong Ng of EE, and Boris Kiefer and Jacob Urquidí of physics.

NEW ENGINEERING PUBLICATION VIA E-MAIL



The College of Engineering has initiated a new publication, Aggie, Inc, distributed twice a month via e-mail. Keep up to date with news items from C of E, its departments, and pertinent NMSU happenings, awards and opportunities. To subscribe, send an e-mail message to: listproc@nmsu.edu Leave the subject line blank. Type this command as the message: subscribe NMSU_Engineering_News Your Name (using your actual name). Aggie, Inc, will be delivered to the e-mail address from which you subscribed.

SCHOLARSHIP GRANT FOR NEW NMSU STUDENTS

The New Mexico Alliance for Minority Participation (AMP) will receive a \$395,992 grant from NSF to provide scholarships for NMSU students. Computer Science, Engineering and Mathematics Scholarships (CSEMS) will be awarded to 30 transfer and incoming freshmen interested in study in those fields. CSEMS grants are awarded to academically talented and financially needy students, with the long range goal of transition to high-technology workforces. For more information or to apply for a scholarship contact Ricardo Jacquez at (505) 646-3463 or Rose Pena at (505) 646-3211.

Alumni Profiles

Lucas Shiver, '03

Luke Shiver (Class of 2003) is enthusiastic about sharing his observations on the engineering profession after two years with Cummins, Inc. in Columbus, Indiana.

When he addresses today's ME students during Senior Seminar this spring, he'll emphasize the role business skills and understanding have for success in private industry.

"Profitability," according to Luke, "is the #2 priority (Quality is #1) at Cummins. A design, besides producing the desired object, must be a worthwhile investment."

Cummins designs professional service tools for high horsepower engines. Part of Luke's work there involves validating production costs for product design, assuring that a comparable part is not being produced elsewhere for a lower cost. Luke has found



Lucas Shiver

this aspect of engineering design exciting and challenging to the extent he would consider a master's in Business Administration related to engineering were he to return for further education.

Linking education to the business of engineering should have a greater emphasis, he believes, in the undergraduate program, in the form of input from people in the

industry. Cummins is supportive of Luke's participation as a Senior Seminar presenter.

Luke's place at Cummins was confirmed before his graduation. "I did my job search through NMSU's Career Placement Office," he explained, "with a half-dozen interviews and multiple job offers as a result." He decided on Cummins because the work best matched his interest.

Based in Columbus, Indiana, Cummins employs a workforce of 24,000 worldwide. There are 13 facilities in Columbus which provide interaction between the plants and opportunities for professional growth.

Luke is satisfied with the challenges of his position and enjoys the Indiana climate though he misses southwest cuisine. "Most people here don't even know what green chile is."

Lance Maurer, '96

In less than a decade, Lance Maurer (Class of 1996) has become a senior mechanical design engineer for the world's fifth largest aerospace company, and seen two of his films brought to view.

Within a month of graduating in 1996, Lance set off to work for a relatively small company, Golden Data Systems in Albuquerque, near his and his fiancé's parents.

A couple of months later, the small company became part of B.F. Goodrich, and the engagement ended.

Long term, both events ushered in new directions for Lance. Though transition to a large company entailed predictable stress, Lance benefited from the expertise and experience in his relatively small division, Space Flight Systems. "I was the youngest by about a decade, working with tremendously brilliant people. I have learned, and continue to learn, so much from them. My senior boss was involved in putting devices on the moon. The division designed the initial GPS satellite systems. They were predicted to last seven to eight years; eighteen years later they're still operating."

Space Flight Systems work on very specific, costly components of electronic systems used in aerospace. They contract to major companies including Northrop, Lockheed-Martin and Boeing.

In addition to design work, Lance is involved in the Environmental Lab where the designed components are thoroughly tested. Lance said, "As opposed to some large companies where work is divided like an assembly line, we are self-sufficient, per-



Lance Maurer

forming the full gamut from design through testing.

"When you're putting a Delta 4 Rocket, for example, into orbit," he explains, "it's a billion dollar venture. Every aspect, every component must be correct. The electronic components we design must, for example, be able to handle the thermal conditions of space."

Proud and pleased with his NMSU experience, Lance has stayed in touch through reunions and fraternity activities, as a recruiter for his company, and as presenter for Senior Seminar. He'll be participating in the last activity again this spring, speaking on the various aspects of business as well as straight engineering in a "real" world work position.

The other direction Lance took was towards creative interests. He got his first sight of New York City and its wonders two days before 9/11 when his feature length film was shown in a festival there.

American Alien, a dark comedy in black and white about a road trip through the desert following an alien abduction, has

(according to the creator) some metaphorical links to the Wizard of Oz.

A short followed. A replica of 20's style silent films, complete with high melodrama, heavy Germanic music, sepia tones and hues, and dialogue cards written in stylized Victorian English, Lance describes *The Legend of Aerreus Kane* as a cross between *Dracula* and *The Good, The Bad and The Ugly* – the lone gunman's quest to rescue the fair maiden kidnapped by a monster.

Currently, he's working on the side with other NMSU engineering alumni on developing digital visual software.

NEWS BRIEFS

Rafael Valadez of ASME received the award for Outstanding College of Engineering Spirit Organization at E-Council's Fall Formal.

College of Engineering float won 2nd place in this year's Homecoming Parade.

HOPE – Hispanics Offering Promise of Education to Children, a new engineering group chartered this year, will be providing outreach, mentoring and tutoring to high school students.

SAE Formula 1 – Plans are in progress to add this competition, similar to Mini Baja, of building a race car to C of E opportunities.

ENGINEERING WEEK: FEB. 20-26
ME ACADEMY ANNUAL MEETING: FEB. 25

Bearings



Department of Mechanical Engineering
 New Mexico State University
 1040 S. Horshoe, Jett Hall Rm. 117
 Las Cruces NM 88003-8001

Nonprofit
 Organization
 U.S. Postage Paid
 Las Cruces, NM
 Permit # 162

Bearings is a publication of the
 Mechanical Engineering Department
 New Mexico State University.
 P.O. Box 30001 Dept. 3450
 Las Cruces NM 88003

Editorial Staff

Editor-at-Large: Dr. Ronald J. Pederson
 Editor: Helen Stork
 For comments or suggestions, contact:
 hbstork@me.nmsu.edu

ME Academy News Park Named Professor of the Year

"Surprised and honored," was Dr. Young Ho Park's reaction to his selection as the 2004 Professor of the Year. This is the fifth year the ME Academy has recognized a faculty member for outstanding contributions to the department through excellence in teaching, research and service.



Dr. Young Ho Park

Dr. Park's involvement with his students extends beyond the classroom, shown particularly by the support he provides to ME 426/427 students. As coordinator for this inter-disciplinary capstone class, Dr. Park responds to a wide range of needs at all hours of the day. Typically, he mentors two or three of the team projects to assure students have their project choices.

"I really value teaching, the close relationships and contact beyond the classroom," Dr. Park explains. "I care about students. It is interesting and fun to work with them, meeting many different personalities. I enjoy interacting with the other engineering departments also through the capstone class."

After completing a doctorate at the University of Iowa, Dr. Park worked for Ford Motor Company and the Center for Computer Aided Design at Iowa before joining the ME faculty in 2000.

His main research focus is computational mechanics with applications to design optimization and reliability assessment of structural systems. He is a regular contributor to professional journals as well as a reviewer for various ASME publications. In 2001, the NMSU Chapters of ASME/PTS honored him as "Outstanding Faculty."

Lindsay Gilbert First to Receive New Endowed Scholarship

Emily and Louis Snow would certainly approve of Lindsay Gilbert as the first recipient of a newly endowed scholarship in their honor.

The scholarship's preferred designation for an outstanding female student is a first for Mechanical Engineering. Lindsay meets that criteria, as well as junior status and a 3.3 or higher GPA. An enthusiastic participant in college and department activities, engineering society member, and student ambassador, she will soon be inducted into Pi Tau Sigma honor society.



Lindsay Gilbert

Emily Snow's story is a model for young women (and men). Born in Budapest, Hungary, she earned a BS in Mechanical Engineering in 1950 from the Technical University, Budapest, and taught there until the Revolution of 1956. Caught and imprisoned with some of her students by the Russians, Emily bribed a guard to free them. Despite being injured during the escape, she led her students to Austria and freedom.

She chose asylum offered to the refugees by the United States and went on to master's study at Catholic University. In 1959 she came to NMSU to establish a test lab at PSL, met and married Louis Snow. Though she left for private research, Lou remained at NMSU until retirement in 1985.

Lindsay started young. An avid 4-Her, she raised animals and garden produce, bought her first truck to haul her animals and other projects around before she had a license. Her work ethic supports her college career.

Wanting to work at Boeing since high school days, Lindsay relished the opportunity for a co-op with Boeing in California earlier this year. She was part of an aerodynamics team performing verification tests for the Shuttle program. They did on-site analysis for NASA using a wind tunnel. Later she assisted in preparing presentations, even giving one herself. It was as wonderful as she hoped: challenging, exciting, friendly co-workers, and a supervisor who guided and taught her a great deal. She will work for Boeing again this summer, hopefully at the Seal Beach facility.

The Emily and Louis Snow scholarship helps counter the downside of the co-op. Unlike previous summer co-ops, the high cost of California living reduced the amount Lindsay could save for covering school expenses.

ME Academy welcomes.....



Gina Rightley
 B.S.M.E & Ph. D.
 NMSU
 Sandia
 National
 Laboratory



P. Wayne Myers
 B.S., UNM,
 MBA, UTEP
 Boeing
 Electronics
 Manufacturing



Rodman Linn
 B.S. & Ph. D.
 NMSU
 Los Alamos
 National
 Laboratory



Mark Stevens
 B.S.
 NMSU
 Allied Signal/
 Honeywell
 WSTF



Lynn Parnell
 B.S.M.E & Ph. D.
 NMSU
 M.S. North
 Carolina U.
 Space & Naval
 Warfare
 Systems Center

Not Pictured: Edward Lumsdaine, B.S.M.E., M.S.M.E., D.Sc., NMSU
 Former Dean of Engineering - Michigan Technological University,
 Engineering University of Michigan-Dearborn, University of Toledo-
 Ohio, former Director of NM Solar Institute at NMSU