ECEN News OKLAHOMA STATE UNIVERSITY

Fall 2002 "Undergraduate Education" Volume I, Issue II

NEWSLETTER

Inside this Issue

Contact Information

If you have any noteworthy events or would like to see a particular item in the ECEN newsletter, e-mail your suggestions to Karen Holt at: *ecennews@ceat.okstate.edu*

Also check out the newsletter on the web site at: *www.ece.okstate.edu*

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Engineering a New Generation

It has been a busy time in ECEN since the Summer 2002 issue. The 45th IEEE International Midwest Symposium on Circuits and Systems (MWSCAS), which was planned and hosted by the school, was held on the OSU/Tulsa campus, August 4-7. Planning for MWSCAS-2002, one of the oldest IEEE conferences began approximately three years ago and culminated in a wonderful conference attended by nearly 600 people from all over the world. It was arguably the most successful Midwest Symposium ever held in this country, and is a credit to ECEN and all of those at OSU who made it such a great success.

Our OSU/Tulsa program continues to grow, with enrollments up substantially this year. Planning has begun for a landmark engineering research building on the OSU/Tulsa campus with the architectural design scheduled to begin soon.

The focus of this issue is on students and education. Inside you'll find a profile of Alan Cheville, a young assistant professor who is developing innovative teaching methods with support from National Science Foundation. Alan is also chairman of the ECEN ABET committee preparing for our next accreditation visit in 2003.

It's no secret that we have some excellent students in ECEN. Bryan McLaughlin, an ECEN senior, was recently awarded a prestigious Barry M. Goldwater Scholarship. What makes this truly exceptional for ECEN is that this is our second winner in so many years, since Scott Wise won a Goldwater Scholarship last year! Of course we have some outstanding alumni, too. Karen Holt profiles Dr. Legand Burge, a 1979 graduate of ECEN who has had an exceptionally diverse and distinguished career.

This fall we say goodbye to Rea Maltsberger as she retires from ECEN after 18 years of dedicated service to our students. Good luck, Rea – we'll all miss you!

May I humbly suggest you consider OSU and ECEN as you plan your giving this year. Your generous gifts support scholarships, departmental activities and program development. The OSU Foundation provides many ways to give at www.osuf.org. Jason Coniglia, Director of CEAT Development, can answer your questions at (405) 744-3747 (jcaniglia@osuf.org). Be sure to specify ECEN as the recipient.

Keith A. Teague, Interim Head, ECEN

Feature Article

LASER CULT

The Photonics Lab, located in the basement of Engineering South, offers two elective courses, and is taught by Dr. Alan Cheville. These courses are unique in the way they link modern teaching methods with laboratory experiences instead of designing a course around topics. The courses are based on case studies covering half a semester. The case studies discuss real world problems. Students are required to research the problem and to find the best practical solution. Working within a budget and time limit, the students must build their project.

Dr. Cheville uses a method of teaching that he developed called REAL LIFE — Relevancy Enhancement Achieved through Lecture and Laboratory Integrated for Engineering Education. He explains, "The distinction between lecture and lab that students see is artificial, a result of how the university structures courses. This is not how projects are approached in industry, and the university needs to adopt a structure that links lab and learning more closely.

Dr. Cheville uses several techniques to provide a more realistic design experience including team learning; here the students are part of a team and their team assumes responsibility for their education. According to Dr. Cheville, "Learning as part of a team prepares you better for what you will encounter on the job."

In most engineering courses Lecture is used. In this venerable technique, the professor will go up to the board, talk, and write things down. The role of faculty in lecture is to pass along knowledge. "Lecture is not an effective way to communicate some of the most important knowledge students need," Dr. Cheville explains. The courses designed by Dr. Cheville de-emphasize lecture, "I can get up there, and I can dance around and give you a show; I can be an actor. But as the famous educator Jethro Tull once said 'I may make you feel, but I can't make you think'. You have to learn on your own, students must take active roles in learning, not the passive role lecture assigns," Dr. Cheville said.

Dr. Cheville's course works in the following way. First he tells his students a story (the case study) that gives the students an engineering problem in which they have to solve. The students form teams and take on the roles of characters in the case study. Once the students go through the story, they have to come up with a solution. The case study does not give students the solution to the problem; rather it puts the problem into perspective.

Vital Statistics

Name: *Richard Alan Cheville*

Date of Birth: *1964, in Palo Alto, California*

Family: *wife, Karen*

Present Position: *Assistant Professor of Electrical and Computer Engineering, Oklahoma State University*

Education: *Rice University, Houston, Texas; B.S. in Electrical Engineering, 1986; MEE in Electrical Engineering, 1987; Ph.D. in Electrical Engineering, 1994*

Professional Affiliations & Services:
Institute of Electrical and Electronics Engineers; American Physical Society, International Laser Science Division; Optical Society of America

Research Interests: *time resolved carrier dynamics in semiconductors and disordered systems especially nonexponential relaxation; nonlinear optics stressing harmonic generation of ultrashort pulses; electron beam pumped excimer lasers*

Teaching Experience: *courses in photonics, electromagnetic fields, computer hardware & programming, and introductory engineering; developed NSF supported undergraduate photonics laboratory and course sequence*

Honors & Awards: *Robert Welch Foundation Fellowship, 1988 - 1993; Eta Kappa Nu, Omega Chapter, excellence in teaching award, 2000; NSF CAREER award, 2000*

Step two involves reading assignments. Every class period students are assigned a reading that gives them another piece of the solution to the problem. Every class assesses students' knowledge of the reading assignments. "It is important to give students constant feedback on how well they are understanding course material." Dr. Cheville said. "It is easy to correct misconceptions if you can identify them early. If you wait four weeks to test students, it is too late to correct lack of understanding."

Next the teams must write a proposal, which explains how they will solve their problem. Their proposals are accepted, accepted pending mandatory revisions or rejected, mimicking how things are done in industry. Part of the proposal is to put together a budget and specify the parts they need. "If students have done the design, if teams can convince me they are knowledgeable about the solution to the problem, their proposals will be accepted. As in real life design this is no guarantee that the design will work. But at least I know you can fix it as you build it," Dr. Cheville explained.

The next step is building the design. "Building a project is the ultimate test of understanding and teamwork," said Dr. Cheville. "The completion of a difficult project is what engineers do and is what employers hire our graduates for. Many students are knowledgeable about all the parts of a project, but have a hard time bringing it to completion. This course teaches them that skill."

After everything is built, the students must test their design, and generate a specification sheet and final report, exactly as if they were to build something for the government or industry. However, if they cannot prove everything on their specification sheet, the final report needs to be rewritten. The entire grade for all the work they have done on this project is the final report.

"We must make the university a place where faculty redefine their roles from lecturers to mentors."

- R. A. Cheville

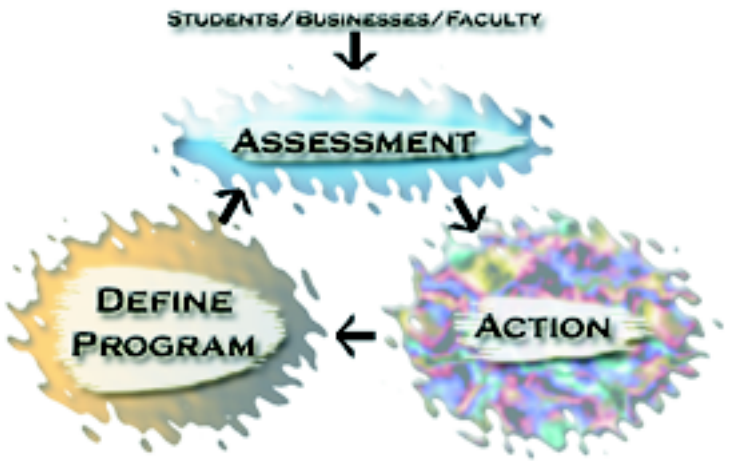
Evaluating is the last phase in this process. Dr. Cheville evaluates their work, but the students also evaluate their teammates' work. "Students often dislike team oriented classes because the perception is that stronger students carry the weaker ones," according to Dr. Cheville. "In the REAL LIFE model the other students on your team evaluate your contributions and their evaluation affects the grade you get. You can fail the course if you don't contribute. Such evaluations are a critical part of engineering jobs in industry as are the consequences of not being able to function on a team. Teamwork is a skill that is learned and this course prepares students before they face this on the job."

The National Science Foundation supports this project under the Course Curriculum and Laboratory Improvement program. The school currently is asking for more money to apply it to more courses. Educating engineers is of great interest to Dr. Cheville, and hopefully he can continue to "make the university a place where faculty redefine their roles from lecturers to mentors."

- by Karen Holt
Assistant Editor

Coming Down the Pipe

ABET: Define, Measure, Change



How good is Oklahoma State University really? This is a very hard question to answer, but in order to make sure all universities meet minimum standards; universities have to be accredited by a national organization.

The Accreditation Board for Engineering and Technology (ABET) is responsible for making sure that all the engineering and technology programs in the country are accredited. To achieve accreditation there are several items that ABET looks at: each school has to have a professional component; the professors have to be good and knowledgeable in their career. Schools have to have adequate facilities, i.e. labs and classrooms and offices. There has to be support by the university, and they have to provide the resources needed.

Several years ago the accreditation process changed from ensuring that all universities teach a given minimum skill set, to letting universities set their own educational priorities. The focus has shifted from "bean counting" to continuous quality improvement. This is both a challenge and an opportunity for ECEN. "We have to try to craft a program that's different from other programs, with different goals, yet at the same time ensure qualtiy," said Dr. Alan Cheville.

In order to meet ABET requirements, ECEN has been taking a serious look at who we are and what we teach. Thus the first step in this process is to define our program to address the needs of our *constituency*; in the case of ECEN these are the students, the faculty, and the employers that hire our students. Our students must gain certain skills by obtaining a degree in electrical engineering at OSU- the set of skills we teach to are known in ABET terms as *outcomes*.

Once the outcomes are defined, ABET requires every school to demonstrate that the students are achieving those outcomes; this is done through the process of *assessment*. The assessment is the most difficult task facing ECEN; it is extremely difficult to know precisely what students know. Often it is assumed that knowledge is directly related to grades in courses, many programs look at this because it's easy. However course grades don't necessarily reflect knowledge gained. Some students get good grades in courses in which they didn't learn much, and in some courses students don't get good grades, but learn a significant amount. One of the assessment techniques being applied is a survey asking students how much they learned. Another technique is to ask graduates how well their OSU education prepared them for a career compared to graduates from other universities.

Once assessment data is measured the faculty in ECEN look for weaknesses in the program. Do students or alumni express dissatisfaction with OSU? Is a course not covering needed material? If any weak areas are found in the program, the faculty looks at what actions to take. Actions, or changes, can affect everything from individual courses to the entire curriculum. Besides weaknesses actions can address keeping our program up to date or offering new, cutting edge material.

The ABET process of define-assess-act is cyclical. After ECEN takes actions, it is necessary to go back and look at the program again to see if we improved things, to make additional or different changes in our program, even change the definition of what the electrical engineering major is.

This is a continual process; ECEN is defining, measuring and changing the engineering program constantly. At press ECEN has found several areas that can be improved. One of these is student advising. While we have advised students well on which courses they should take to graduate, the advice has not included much career guidance. Starting in January we will be changing the entire ECEN program to let students gain more expertise in a particular career field they find interesting. These changes let ECEN provide more guidelines to the students, challenge them to choose the most productive set of elective courses rather than the easiest, and ask students to have more of a role in defining their own careers.

There are going to be a lot of changes in the way we do things in our department, and it's important for ours students, and the people who employ our students to get feedback to us in how we can do things better.

Honoring Academics

Vital Statistics

Name: *Bryan L. McLaughlin*

Date of Birth: *July 22, 1980*

Family: *Father, John; Mother, Carol; Brother, Justin*

Present Position: *Electrical Engineering Senior*

Hobbies: *rock climbing; mountain biking; wave-running; snow and water sports*

Activities: *Founder of Engineering Kids (EKIDS); American Indian Science & Engineering Society Vice President; Mortar Board Honor Society Vice President of Technology; Selected to be a short-term student ambassador to Japan in 1998; Tutor for "the fundamentals of electronic circuits course"*

Awards: *Recently named a "Barry M. Goldwater Scholar" - the nation's preeminent undergraduate scholarship and award for excellence in math, science and engineering research; President's Distinguished Scholar Award & Scholarship; 100% of education funded through academic merit and leadership scholarships*

The prestigious Barry M. Goldwater Scholarship was awarded to an Oklahoma State University student from Oklahoma City. Bryan McLaughlin, electrical engineering [senior], was notified on March 30 by a letter in the mail.

"I'm still in awe, but I'm honored to receive the award and just humbled by the whole thing," said McLaughlin, who graduated from Putnam City West High School. There are many scholarships for research, but the scholarship is on the engineering side, McLaughlin said. Robert Graalman, director for scholar development and recognition, helped McLaughlin apply.

"This scholarship is made for students in this area of study being engineering, mathematics and natural sciences," Graalman said. McLaughlin submitted an application for the scholarship in the fall [of 2001] and participated in a campus competition. Three students would be chosen to receive application assistance from the scholar office.

"Dr. Graalman was confident about the application process and was available any time for critiquing writing," McLaughlin said. "He is very devoted to students." The three students chosen from OSU answered questions concerning their personal activities and accomplishments, and listed their activities, future goals and research to apply.

> *"I'm still in awe, but I'm honored to receive the award and just humbled by the whole thing."*
>
> *- B. McLaughlin*

"Dr. Graalman was absolutely wonderful through the entire application process," McLaughlin said. "After a few appointments with Graalman, I was confident the application process was manageable and that OSU would support me." The scholarship also requires an essay about research intended to be done or research already completed.

"I worked at IBM Almaden Research Center in San Jose, Calif., last summer with computer control electronic devices, and I was able to write my essay on the research I did there," McLaughlin said.

He has been the president of the student group Institute of Electrical and Electronics Engineers for the past two years. Through IEEE, McLaughlin started the Engineering Kids program. "We take hands of engineering projects to fifth-grade students trying to promote engineering and science at a young age," McLaughlin said. The EKIDS program is in response to the nationwide issue of the decreasing number of engineering students enrolling and graduating.

McLaughlin has been a member of the American Indian Science and Engineering Society for the past two years and is vice president for this year. He is the vice president of technology for Mortar Board Honor Society and on the College of Engineering, Architectural and Technology Student Council.

- by Mary Henderson
Daily O'Collegian

The Next Generation

Student Activities and Organizations

Senior Design II

An event [held in April] organized by the OSU [IEEE] student chapter showcased the semester works of electrical and computer engineering seniors, including a robot that recently won a regional competition and a marketable, original device fabricated by scholars for a Stillwater firm. Held in the Advanced Technology Research Center, the displays and demonstrations detailed a number of team projects completed [last] spring in ECEN-4023, senior design II.

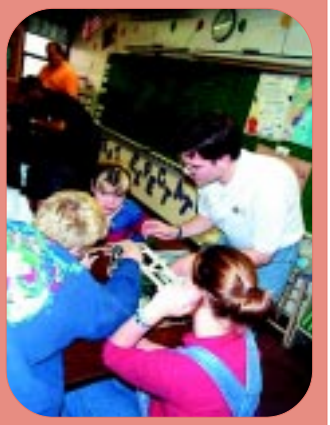
In the picture from left to right are Heath Million, Brad Chambers, Caleb Downing, and Nick Swezey (not shown). They demonstrated the robot designed, built and programmed this semester that took first place in the IEEE Region V Robotic Maze Contest sponsored by Texas Instruments in Houston. The competition, featuring 28 entries, involved a qualifying round in which the robots had to successfully navigate a maze. In the final round, the robots made a complete mapping run, recording the most efficient route through the maze, before being switched over to speed mode for a subsequent timed run. OSU's robot completed the timed run in 17.3 seconds, more than 8 seconds faster than the runner-up.

Other projects presented included an audio recognition system that pinpoints the origin of sounds; a robot that locates and extinguishes a fire source within a maze; a maze solving robot; and a software/hardware interface system that supports the control of a home's electronics, lights, security and heating, ventilation and air-conditioning via the Internet.

"The main purpose of this event was to allow OSU students and other engineering students to see what we're working on in electrical and computer engineering," said Bryan McLaughlin, IEEE president who, along with Brian McKay, organized the event. "People wonder what electrical engineering is all about, and these projects hopefully illustrated all the concepts we seniors have learned put into something useful."

- by Adam Huffer
OSU Commication Specialist

Institute of Electrical and Electronics Engineers



Engineering Kids is a program started by OSU-IEEE and Seagate Technology in response to the declining number of students enrolled and graduating in engineering in the last ten years. The long-term effects of this trend are devastating.

The Engineering Kids program debuted in Fall 2001 and ramped up in the spring of 2002. During the spring semester we had over seventy volunteers, thirty participants and worked with 160 students. We featured Dr. Snookers, a mock mad scientist who got the students excited in a large group prior to the hands on projects.

For the future, we would like to see Engineering Kids become its own student organization where non-engineering students can participate and become officers without being in OSU-IEEE. This would allow engineering kids to be an ongoing focus each year with new officers and members that would carry the program to become effective in its mission to excite young students to pursue math, science and engineering for a career.

For the 2002-2003 academic year, EKIDS will have Bryan McLaughlin from the school of Electrical and Computer Engineering as President and Jamie Janota from the school of Industrial Engineering and Management as Vice President. The program will be restructured to incorporate all volunteers and hopefully will extend to fifth-grade classrooms beyond the area classrooms. "I would like to see Engineering Kids become a national student organization that spreads to have a chapter at each campus across the U.S. We need funding, support and stong future leadership for that pursuit."

- by Bryan McLaughlin
Founder of EKIDS

Look us up on our web site at *http://ekids.okstate.edu*

Research & Scholarships (Spring 2002)

Coordinated control of reconfigurable robot formations.

Shielding effectiveness measurements in a reverberation chamber.

Vector network analyzer measurements in a high frequency chamber.

Papers Appeared in Print:

C. F. Bunting, "Statistical Characterization and the Simulation of a Reverberation Chamber Using Finite Element Techniques," IEEE Transactions on Electromagnetic Compatibility, vol. 44, no. 1, pp. 214-221, 2002.

R. Fierro, P. Song, A. Das and V. Kumar, "Cooperative Control of Robot Formations," Cooperative Control and Optimization, R. Murphey and P. Pardalos (eds.), Applied Optimization, vol. 66, ch. 5, pp. 73-93, Kluwer Academic Press, 2002.

J. Zhang and **D. Grischkowsky**, "Whispering Gallery Mode Terahertz Pulses," Optics Letters, Vol. 27, pp. 661-663, 2002.

M. Torii and **M. Hagan**, "Stability of Steepest Descent with Momentum for Quadratic Functions," IEEE Transactions on Neural Networks, vol. 13, no. 3, pp. 752-756, 2002.

J. C. West, "Low-Grazing-Angle (LGA) Sea-Spike Scattering from Plunging Breaker Crests," IEEE Transactions on Geoscience and Remote Sensing, vol. 40, no. 2, pp. 523-526, 2002.

J. C. West and Z. Zhao, "Electromagnetic Modeling of Multipath Scattering from Breaking Water Waves with Rough Faces," IEEE Transactions on Geoscience and Remote Sensing, vol. 40, no. 3, pp. 583-592, 2002.

G. G. Yen and Lu H., "Hierarchical Genetic Algorithm for Near-Optimal Feedforward Neural Network Design," International Journal of Neural Systems, vol. 12, no. 1, pp. 31-34, 2002.

G. G. Yen and Lee S., "Identification of a Deterministic Constant-Affine State Space Model with Known Initial Conditions," IEE Proceedings - Control Theory and Applications, vol. 149, no. 3, pp. 217-225, 2002.

Grants/Contracts Awarded:

C. F. Bunting; $31,700, Old Dominion University Research Foundation for NASA, "Field Penetration Studies -- Statistics and Bounding."

R. A. Cheville & D. R. Grishkowsky; $149,146, U.S. Department of Energy, "Terahertz Spectroscopy of Complex Matter."

R. A. Cheville & D. R. Grischkowsky; $25,056, Rice University, "Nanoshell-based Infrared and Terahertz Adaptive Materials and Devices."

J. M. Chung; $17,500, Nomadics, Inc., "Wireless Audio/Video Headsets."

T. W. Gedra; $80,000, OGE Energy Corporation, "Planning and Operation of Combined Gas and Electric Systems."

C. G. Hutchens; $22,543, Halliburton Energy Services, "Quartz Resonator Based Pressure Measurement System for Downhole High Temperature Applications."

C. G. Hutchens; $22,342, Space and Navel Warfare Systems Center, "Delta Sigma Analog to Digital Converter Design."

J. S. Krasinski; $423,427, Office of Naval Research, "High-Functional Epitaxial Semiconductor Photonic Materials and Devices for UV-mid IR Applications."

C. D. Latino; $37,275, ABB Inc, Totalflow, "ABB Inc. Totalflow Intern Program."

C. D. Latino; $75,181, Sverdrup Technology, "Task 4.0 Problem Parts - ECEN."

C. F. DeYong, **S. A. Morris**; $345,765, Sverdrup Technologies, "Task 2.1 Demand Forecasting - INDEN & ECEN."

K. A. Teague; $186,751, Maryland Procurement Office, "FNBDT: Investigation of Enabling Technologies for Secure Multimedia on Your Desktop."

M. A. Soderstrand, N. A. Kotov, J. L. Wiener; $1,047,732, National Science Foundation, "IGERT: Advanced Graduate Training on Photonics Research."

Awards:

G. Scheets, associate professor in ECEN, has been named an "NTU Outstanding Instructor" for the ninth consecutive year.

Legand's Legend

I met Dr. Legand L. Burge, Jr. at the 45th IEEE Midwest Symposium on Circuits and Systems, which was a great success by the way. However, before I met Dr. Burge, something gave me the idea that he was a man of honor, respect and dignity.

Watching from a distance, I observed other professors, department heads and deans swarm around him as if he had something great to offer, which he does. One of the biggest traits he possessed was passion. I saw this passion in his eyes when I first shook hands with him, and it was proven to me that he was an inspiring man.

Dr. Burge graduated with his doctorate degree at Oklahoma State University in 1979. After asking what the school had to offer him he replied, "Being an African American, you probably want to step back a little and say first off, how did I even get there?"

During the 1960s, there was not much outreach for African American kids. At the time, William Hughes was the department head for Electrical and Computer Engineering at OSU. "Hughes", according to Dr. Burge, "had a vision to graduate more African American kids in electrical engineering."

So the Dean, along with Hughes, went to Douglas High School, where Dr. Burge attended, and talked to some of the top students about entering the program. Hughes presented an opportunity to give out scholarships, but the requirement was that the students had to work hard. Dr. Burge took the challenge along with many of his friends, and they all succeeded, living fulfilling lives.

According to Dr. Burge, Hughes made it possible with scholarships and friendliness as well as OSU having a welcoming environment regardless of the white/black interaction during the time.

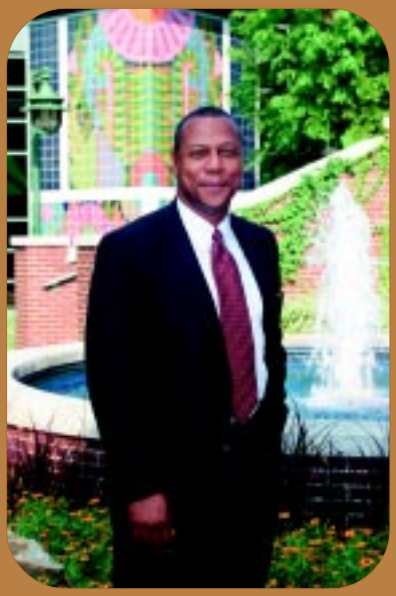
During Dr. Burge's enrollment at OSU, he was a part of the Air Force ROTC program. He graduated with an ROTC commission, and after about twenty-seven years in active duty, he retired as a colonel.

"I enjoyed the time; it was probably the best decision I could've made," Dr. Burge explained. He received his doctorate degree while serving as a captain in the Air Force. He was working as a team member on the faculty and was an assistant researcher under the professor Dr. Rao Yarlagadda.

Dr. Yarlagadda, who is still teaching here at OSU, guided Dr. Burge through many long nights and weekends. From there Dr. Burge acquired experience in space acquisition, space technology, applications to space and electrical engineering. He then taught at the Air Force academy, became a lead researcher at the National Security Agency, worked at the Pentagon under Colin Powell's supervision, did technology transfer for NATO and the list goes on.

After retiring as a colonel in the Air Force, he became and is now currently Dean of the college of Engineering, Architecture and Physical Sciences and Professor of Electrical Engineering at Tuskegee University in Alabama.

The undergraduate program there consists of approximately 800 students with about 50 graduate students. While he is directly involved with all facets of it, he deals with what he calls the "seed-planting process." According to Dr. Burge, they have to get students to understand that once they are out of the college scene, there is a "floor"



Vital Statistics

Name: Legand L. Burge, Jr.

Date of Birth: August 3, 1949, in Oklahoma City, OK

Family: wife, Janese; daughters, LeAnn and Lamuel; sons, Legand III and Louis

Present Position: Dean of the College of Engineering, Architecture and Physical Sciences; Professor of Electrical Engineering, Tuskegee University

Education: Oklahoma State University, Stillwater, OK Ph.D. in Electrical Engineering

Hero: Colin Powell, George C. Marshall, Benjamin O'Davis (all share key leadership traits)

Leisure Activities: Playing the piano and organ, reading the bible and interest in computers

Research Interests: information theory, coding theory, digital signal processing, acquisition issues, communications

to begin their learning. Dr. Burge and his faculty teach the students how to use some software, theoretical principles and they take them to the lab to do an experiment or two. However, that is just the beginning.

Dr. Burge tries to prepare the talent that the students will use later. "Talent is an evolving thing," says Dr. Burge, "I mean everybody has some kind of talent, but you need to understand where the talent is and what it is, and there are still other areas to develop." So what Dr. Burge is attempting to do is to show students that they can succeed, particularly at Tuskegee.

"First of all we need to understand the history behind Tuskegee," Dr. Burge explains. Tuskegee's beginning stages came from the slavery mentality when Booker T. Washington started the university. In 1881, only about fifteen years after the freeing of the slaves, Booker T. Washington had to shift the mentality of the people, and they had to think differently. "They had to realize that they could get paid for work, be effective and actually be worth doing something rather than being lower than an animal." The new goal was to make these people productive.

"The same kind of paradigm is around now," says Dr. Burge. "We get industry and industrial relationships, and the students get internships and cooperative experiences in an hands-on environment. So the students need to understand that they are somebody, and they can be developed into something great." Right now, they are teaching a front-end class, Technology and the Simplications of Society, which is more of a college wide course addressing contemporary issues.

> *"...the students need to understand that they are somebody, and they can be developed into something great."*
>
> *- L. Burge*

I asked Dr. Burge what inspired him to be an educator, he replied, "Colonels are like professors at a University, they are leaders, they are responsible people, and they are responsible for pulling people up and mentoring. So what I try to do in the classroom is use the same principle behind being a colonel. It's to get people prepared so that they can be stars, so that you can be an industry innovator, so that you can be an engineer who is going to go out and do some great things." Dr. Burge feels that his responsibility is to find out what works with each student.

He decided to be an educator because he likes to see students learn. He thinks that because of his experience of serving in the Air Force and in industry that he can offer a lot. Through Dr. Burge's experience, he has realized that industry wants people to come into their fold being able to produce on the first day. So he tries to prepare his students that way; that can go to work the first day on the job. He wants his students to understand what the competition is like once they leave college.

Matthew R. Perry, Legand L. Burge, Rao Yarlagadda, Meemong Lee

Bobbie Burge, Dr. Burge's mother, taught him four main aspects about life, and he tells his students the same thing, which are "know that you are as good as anybody else, be the best that you can be at whatever you do, have a sense of values, and there is a piece of life that you don't have control over; there is hope." These four areas made a lot of difference to him, and he feels that kids need direction that we are missing in today's society.

Oklahoma State University has definitely prepared him for his career. There was always a good interaction between industry and education at OSU. Stillwater was a great place for him, and that is where he did a lot of his growing up.

After the interview ended, I regretfully understood that I could not spend the rest of the day with him. Dr. Burge is a motivational and uplifting man who has lots of hopes and dreams for people who do not have an expanse of opportunity. It would be a blessing to have more educators who have the same hope for less fortunate students: somebody who believes in kids, somebody who believes that they could be something great, and somebody who can give our schools an encouraging spirit.

- by Karen Holt
Assistant Editor

Notes & Notices

45th IEEE International Midwest Symposium Activity

The 45th IEEE International Midwest Symposium was held in August at Oklahoma State University-Tulsa. The attendance at the symposium was the second largest among all the 45 Symposia held all over the world and was second in attendance to Rio. It included over 500 registrants from over 30 countries, over 180 universities and from many companies.

We had the largest number of companies sponsored, university support and the support of the National Science Foundation and had several exhibitors at the symposium. Close to 500 papers were presented at the symposium in terms of oral as well as poster presentations. Several highlights of the symposium included a large number of research papers presentations, a student paper contest, short courses, two keynote speeches, several special presentations, exhibits, and industrial as well as social tours, some of which are given below.

The Symposium committee consisted of General Co-Chairs: Michael A. Soderstrand and Rao Yarlagadda, Oklahoma State University (OSU); Technical Program: Keith A. Teague, OSU; Student Paper Contest: Rick Branner, University of California Davis; Tutorials: Ken Jenkins, Pennsylvania State University; Finance & Administration: George Collington, OSU; Corporate Sponsorship: Marc Thompson, OSU and Ron Cooper, OSU-Tulsa; Publications Coordinator: Tom Wehner, Alliance Management Corporation; Publicity: Carl Latino, OSU; Local Arrangements: Marsha Hayes, OSU-Tulsa; Conference Registration: OSU Engineering Extension

The technical program track chairs in organizing the technical programs assisted the symposium committee. The tracks were divided such that all areas of electrical engineering were included in one of the tracks. Three professors from OSU participated in leading their tracks, which include Communications Networking, J.M. Chung; Neural Networks and Control Systems, Martin Hagan; and RF, Microwave and Optical Circuits and Systems, Jim West.

The sponsors of the symposium were IEEE Circuits and Systems Society; Oklahoma State University; National Science Foundation; Williams Communications Group, Tulsa, OK; Center of Excellence in Information Technology and Telecommunications (COEITT), Tulsa, OK; Phillips Petroleum Company, Bartlesville, OK; Halliburton Company, Dallas, TX; Seagate Technology, Oklahoma City, OK; Frontier Electronic Systems, Stillwater, OK; Agilent Technologies, Fort Collins, CO; Optical Datacom, Tulsa, OK; Flight Safety International, Tulsa, OK; Sciperio, Stillwater, OK; Oklahoma Gas & Electric, Oklahoma City, OK; Ericsson Inc., Plano, TX; AFN Communications, Tulsa, OK; Stillwater Designs, Stillwater, OK; Nomadics, Stillwater, OK; AEP-Public Service Company of Oklahoma, Tulsa, OK; Williams, Tulsa, OK; Kay and Steve Wyatt, Bartlesville, OK; McCloud USA, Tulsa, OK; and WORLDCOM, Tulsa, OK.

One of the major highlights of the symposium, which gave a view of the future, was the panel discussion on the "Future of Telecom," chaired by Dr. Paul Kolodzy, Senior Spectrum Policy Advisor, Federal Communications Commission (FCC), Office of Engineering and Technology. The panel members included Dr. Paul Kolodzy, FCC; Mr. Matt Beal, Director of Architecture, Williams Communications; Mr. Steve Carter, Vice President of Engineering, Qualcomm; Dr. Rajiv Laroia, CTO and Founder, Flarion; Mr. Scott Migaldi, Director of Wireless Standards, Motorola; Dr. Carl Panasik, Distuinguished Member of Technical Staff, Texas Instruments; Dr. Brian Woerner, Associate Director of Mobile and Portable Radio Research, Virginia Tech; and Mr. Teddy Wyatt, Vice President of Engineering, Carrier Access Group.

- by Rao Yarlagadda
Professor of ECEN

OSU Distinguished Teaching Award

Dr. Martin Hagan received the OSU Regents Distinguished Teaching Award in the year of 2000. He describes his teaching style as one of encouraging active student participation in the classroom. "When students are asking lots of tough questions, I know they are engaged in the material and will go on later and learn it for themselves outside the class," Dr. Hagan said.

The philosophy is inherent in the Master of Sciences in Control Systems Engineering (MSCSE) program that Hagan helped pioneer at OSU and served as interim head.

"The program was developed to address the needs of professionals who want to specialize in control systems and control related processes, and it's helpful for them to see how the course work relates to what they're doing on the job," says Dr. Hagan.

"I learned as a graduate student that no better way exists to sharpen your understanding of a topic than to try to explain it to someone else."

Remaining forever a student is essential to being a good teacher. "We teach courses today that did not exist when I was in school. With every new class, I have to see what the students can do and what they want to do and to head them in the right direction."

Dr. Hagan has taught and conducted research in the areas of statistical modeling and control systems for the last twenty-five years. He regularly teaches courses in stochastic processes, estimation theory, neural networks, system identification and control systems.

- by Adam Huffer
OSU Communications Specialists

Rea's Retiring

After eighteen years of hard work and dedication in the School of Electrical and Computer Engineering, Rea Maltsberger is retiring from Oklahoma State University.

Rea was best known for her ability to advise and assist students toward their graduation goals, whether it was a Bachelor's, Master's or Doctoral Degree. Not only was she an advisor for OSU ECEN Stillwater students, but she also served as an advisor for OSU Tulsa ECEN students.

Due to her dedication in her position, Rea has been recognized for her job performance with several OSU awards, including the Engineering Distinguished Service Award in 1990, OSU Distinguished Service Award in November 1999 and the Ambassador Program Award in November 2001.

Rea has accepted a new position at Sciperio's of Stillwater. She is very excited about her new move and welcomes a life style change.

A retirement reception was held in her honor at OSU Engineering South on October 9, 2002. In attendance at her reception were family, friends, OSU students, alumni, faculty and staff.Our best wishes and congratulations go out to Rea on her new journey in life and may God be with her always.

- by Karen Holt
Assistant Editor

ECEN Faculty and Staff

Back Row (Left to Right): Martin Hagan, Rao Yarlagadda, Thomas Gedra, Guoliang Fan
Kerry Price, Lory Ferguson, Gary Yen
Barabara Caldwell, Alan Cheville, Jerzy Krasinski, George Scheets
Nancy Crenshaw, Louis Johnson, Yumin Zhang, Chriswell Hutchens, Charles Bunting
H. Allison, Daniel Grischkowsky, Weili Zhang, Rafael Fierro
James West, Keith Teague, Jong-Moon Chung, R.G. Ramakumar
Not Shown: Doris Al-Harake, Lee Clark, Helen Daggs, Carl Latino

We invite you to share your story with us and are interested to know what you have done after graduating from OSU. We encourage you to send us your information for a possible one-on-one interview for ECEN News. (contact information is on the front page)

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