Texas Instruments Enhances ECE’s Analog Engineering Program

Texas Instruments, Inc. (TI) is continuing its long-time partnership with ECE by providing a donation of $2.2 million to create the TI Graduate Fellows Program in Analog Integrated Circuit Design. The gift is among the largest corporate cash gifts in the history of both ECE and Georgia Tech.

Over a five-year period, the TI Graduate Fellows Program will support 60 graduate fellows in analog microelectronics. While an increasing amount of electronic equipment operates digitally, analog technology is necessary to process real-world information, such as the sound of a voice on a wireless phone call.

TI and other U.S. high-tech companies are facing a shortage of well-trained analog engineers. Forecasts indicate that without such efforts, the analog shortage will become even more severe as wireless, optical communications, and other such technologies grow in market importance.

"Texas Instruments needs to recruit 500 analog engineers a year," said Del Whitaker, TI senior vice president. "To put that in perspective, there are not 500 [graduate-level] analog engineers graduating in one year [from U.S. universities]. ...We hope that TI’s commitment reinforces to students and potential students of analog engineering that this is an important, growing discipline that’s critical to the future of electronic innovations."

TI is the leading company in the analog/mixed signal market, and Georgia Tech produces more graduate-level analog engineers than any other U.S. university. According to J. Alvin Connelly, ECE professor and vice chair, this new educational partnership between TI and Georgia Tech will strengthen the products of both organizations.

"With this fellowship program, we will be able to attract the best and most promising graduate-level, electrical engineering students to Georgia Tech and to focus their education on mastering analog integrated circuit design, applications, and related topics," Dr. Connelly said. "The students in this program will learn analog IC design from our excellent faculty and then apply these skills in co-op and intern assignments with TI engineers. I am certain that many of these students will continue with TI as permanent employees after they graduate from Georgia Tech."

For more than seven years, Georgia Tech and TI have enjoyed fruitful educational and research collaborations through the Georgia Tech Analog Consortium (GTAC), an organization comprised of seven faculty members, five other industry partners, and 50 graduate students. More than 15 TI engineers have attended one or more of the bi-annual GTAC program reviews, and three graduate-level Georgia Tech students have held analog engineering co-op assignments at TI. Four students who finished their advanced degrees at Georgia Tech within the past four years are now pursuing successful careers with TI.

Celebrating the announcement of TI’s support are (above) Georgia Tech President Wayne Clough; Del Whitaker; TI senior vice president, and Roger Webb, ECE chair; (left) Del Whitaker; Michael Thomas, provost and vice president of academic affairs; and Al Connelly, ECE vice chair.
From the Chair
Graduate Education

The ever-increasing complexity and diversity of the electrical engineering discipline, together with the inherent time and content constraints on undergraduate education programs, result in increased emphasis and demands on graduate education. The number of graduate degrees awarded by our School is now nearly commensurate with the number of undergraduate degrees awarded. Typically, we award approximately 250 graduate degrees (200 master’s degrees and 50 doctoral degrees) compared to approximately 320 bachelor’s degrees. The graduate program has grown to this size fairly recently, but is now at capacity—capacity being dictated and constrained much more by available faculty and facilities resources than by demand.

Successful operation of a large graduate program presents unique challenges, many distinctly different from those associated with undergraduate operations. The total graduate student enrollment is about one-third of the undergraduate enrollment. The duration of the enrolled students is one year for master’s degree students and usually five years for doctoral students. Typically, graduate students are no longer on the payroll of their parents and must be supported financially. About one-third of the direct classroom instructional effort of the School is in graduate courses. However, the graduate educational program and the graduate research program are intrinsically linked, both in terms of educational and financial support. The School typically supports 338 graduate assistantships expending $4,523,300 annually, $3,540,000 of which is provided by grants and contracts from external sources.

Our goal in graduate education is to produce graduates with increasingly outstanding professional capacity and to create products of research which are valuable and applicable. Quality assurance in our graduate classroom instruction is one important parameter. Defining and procuring support for research projects which are challenging and supportive of student participation is another. Major emphasis is placed on developing collaborative projects with industry to maximize applicability of the research and training. By far the most important parameter is quality assurance of the graduate students who matriculate our program. Thus, we are placing highest priority on recruitment of best-in-class students from major undergraduate electrical engineering programs around the country and abroad and on procuring the necessary financial resources to support these students. Quality graduate programs attract quality students, which enable quality graduate programs. Our program is very good, and we intend for it to get better.
CIENA Corporate Officers Show Commitment to Georgia Tech

CIENA Corporation, a leading supplier of dense wavelength division multiplexing (DWDM) systems for fiber optic communications networks, achieved the highest valuation of a venture-backed initial public stock offering in history in February 1997. The company reported revenue of $287.8 million for the fiscal half year. The explosion in the need for bandwidth has made CIENA one of those companies that has witnessed tremendous growth during the last 10 months, and Georgia Tech is benefiting from CIENA’s success.

Two Georgia Tech alumni, Steve Chaddick and Larry Huang, former Phi Kappa Tau fraternity brothers and now senior vice presidents of CIENA, both feel a sense of gratitude to the School. Each man has adopted a route to show his commitment to and appreciation of Georgia Tech’s ideals and ideas.

Steve Chaddick, senior vice president of Products and Technology for CIENA, has established the **Steve W. Chaddick Endowed Chair in Electro-Optics** in the School of ECE. As an adjunct to the endowed chair, there are three graduate fellowship recipients who will be designated as **Steve W. Chaddick Fellows**. The total proposed donation for this program is $1.65 million, to be supplemented by $750,000 from the Georgia Research Alliance. “I think most of us reflect from time to time on how we became who we are today. When I ask that question of myself, Tech, its people, and my experiences there come to mind clearly as the dominant influences in my early adulthood,” said Mr. Chaddick, who earned both the BSEE and MSEE degrees from Georgia Tech. “I made bonds with people that will last a lifetime, and I learned humility at the hands of not a few professors. In those days, Tech was a great place to grow up and to build a foundation for lifelong learning. My gift is a expression of gratitude for those days and an investment in the future of the institution which has given me so much,” said Mr. Chaddick.

“Leadership and entrepreneurship are creating unprecedented opportunities for new technology applications and supporting business enterprises. Students being prepared for leadership in technology application and management must be exposed in their education to a broader context. Georgia Tech’s Engineering Entrepreneurship certificate program (within the Schools of ECE and Management) enables ECE students to take a series of management courses that require them to put the business principles of entrepreneurship to use in a design course using a business plan for product development and marketing.

“The endowment of this chair is a gift that comes from the heart,” said Mr. Huang, who earned an industrial management degree from Georgia Tech. “This is an opportunity to expose the students in ECE to the business principles of entrepreneurship– to give them the foundation from which they can leverage their technological skills toward solving real-world problems.”

“I learned a lot at Georgia Tech. I felt like it was a place where I grew up–where I went from adolescence to maturity. It’s also a place where I met lifelong friends and my wife. Tech is a place where I got a lot, and I feel like it’s a place where others will also get a lot. I’ve been very fortunate, and I feel a duty–an obligation–to pay something back to the institution which has given me so much,” added Mr. Huang.

CIENA has recently expanded its facilities to Atlanta and is establishing a cooperative education program, which will be mutually beneficial to the company and to Georgia Tech students.

On June 3, 1998, CIENA and Tellabs announced an agreement to merge the two companies to create a next-generation network equipment provider. Under the terms of the $7.1 billion transaction, CIENA will be a subsidiary of Tellabs. Also in June, CIENA introduced the MultiWave Metro™ DWDM system for metropolitan and local access applications.”
belief in Georgia Tech, in the people, and in the program. The school helped me when needed it most,” said Aleksander Szlam, founder, chairman, and chief executive officer of Melita International. “We want to help other people, especially young people.” Mr. Szlam and his wife Halina have made a significant contribution to ECE. Their initial gift is in support of student aid and laboratory upgrades, two of ECE’s areas of focus during the Capital Campaign.

Mr. Szlam entered Georgia Tech in 1970, as a 19-year-old recent immigrant from Poland. Prior to coming to Georgia Tech, he attended the Electro-Mechanical Institute of Technology (a five-year high school) in Wroclaw, Poland and took two English courses at Georgia State University.

Most of Mr. Szlam’s early classes at Georgia Tech were in math and physics. “These helped me learn the English language,” he said. Later, he met F. Kenneth Hurd and Demetrius T. Paris, co-authors of Basic Electromagnetic Theory, and J. Alvin Connelly, who drilled electronics into his students. “It was really intense and challenging—I loved the school and the support from the educators,” said Mr. Szlam, who earned both the BSEE and the MSEE degrees at Georgia Tech. With his area of emphasis being digital signal processing, Mr. Szlam worked closely under Ronald W. Schafer and Thomas P. Barnwell, III.

“It was a good experience, and when I walk through the School, all of the memories come back. I want to help provide similar opportunities for others. My children are being brought up to be concerned for other people and to help others whenever possible. I really believe in this concept,” said Szlam.

Melita International, the company Szlam started, is a leading provider of integrated customer interaction and intelligent call management systems that enable businesses to automate their call center activities, enhance telephony-based customer commerce, and provide a superior level of customer care. Melita’s worldwide customers include leading organizations in the financial services, retail, media, communications, and service bureau industries. Melita began operations in 1983, and it issued its initial public offering (NASDAQ: MELI) in June 1997.

For the 12 months ending December 31, 1997, Melita reported total revenue of $65.8 million. But, Melita International’s success is not measured in revenue alone. This company embodies the triumph of the human mind and spirit as exhibited by Aleksander and Halina Szlam.

Alek and Halina’s story...

began when they met as teenagers at summer camp in Poland. Although they were from different towns, they met again when their families were fleeing Poland, and they were together in Vienna and Rome, prior to their departure for the United States. Under the auspices of Hias, a Jewish organization for resettlement, and the American Jewish Federation, Halina and her family immigrated to Pittsburgh, and Alek and his family came to Atlanta.

While Alek was at Georgia Tech, Halina was majoring in biology at the University of Pittsburgh and working in the Department of Public Health. After a three-year, long-distance romance, they married. Alek continued his education at Tech, and Halina worked at Emory University. Following his graduation, Alek worked in technology, and Halina worked in biochemistry and genetics while raising two children. In 1979, Alek created his first dialer, and Melita International was on its way. During the next four years, Alek, Halina, and Ben Feldgajer, their former brother-in-law, worked part-time out of their houses and garages. In 1983, Alek and Halina went to work full-time at Melita.

From its inception on their kitchen table in the early 80s, to its move into sleek new corporate headquarters in Norcross, GA, in 1995, Melita has in many ways been an extension of Alek and Halina. Both of them have stamped the company with their intelligence, compassion, and innate goodness. Their generous gift to ECE is in keeping with Alek’s and Halina’s basic belief in the goodness of humanity and their desire to help others.
HP Awards Georgia Tech $1.3 Million
Equipment Grant for Computer Enhanced Learning Initiative

Hewlett-Packard (HP) has awarded Georgia Tech a $1.3 million equipment grant that will place the Institute at the forefront of computer enhanced education delivery. Led by Thomas P. Barnwell, III, this campus-wide initiative was inspired by the ongoing work of faculty.

ECE, along with the College of Computing (CoC) and the School of Literature, Communication, and Culture (LCC), will use this grant to purchase HP equipment for high-tech classrooms and for designing interactive learning tools. According to Dr. Barnwell, a professor in ECE, three labs housing 10 HP development stations, or powerful, multimedia personal computers, and eight accompanying laptop computers will be used by Georgia Tech faculty and students to create sophisticated multimedia courseware. ECE will also manage two new servers supporting traditional World Wide Web environments and state-of-the-art technologies like streaming audio and video. In the future, six more servers will be added to Georgia Tech’s overall computing infrastructure. Fifty secured HP laptops will be installed in an ECE classroom this fall, with another 250 to be included in seven more classrooms.

Dr. Barnwell said that this partnership with HP will build on the success of EE 2200 Introduction to Discrete Systems, a Web-based course for sophomores. By having EE 2200 materials constantly available via the Internet, in addition to Georgia Tech’s new computer ownership requirement for students and expanded network capabilities acquired during the 1996 Summer Olympics, Dr. Barnwell said the time was ripe for ECE and Georgia Tech to expand the horizons of computer enhanced education delivery. “With the equipment provided by HP, freshmen in CoC, LCC, and ECE will be introduced to an extensive computing environment, in which they will be working at Tech and beyond,” said Dr. Barnwell.

HP will also provide CoC with a classroom of laptops and two of palmtop computers, while LCC will equip three classrooms with HP desktop computers for use in freshman writing classes. “LCC has done a remarkable job of fostering computer enhanced education in their area,” Dr. Barnwell said. “These multimedia technologies provide the ability to teach communications skills appropriate for an engineering environment.”

Taking part and leading in this initiative has been a tremendous opportunity, according to Dr. Barnwell. “For the first time in my career, improving education has become an exciting issue, and people are actually competing to get into these programs,” he said. “With [Georgia Tech] President Clough’s support of our task force and HP’s commitment of resources to our computer enhanced education ideas, we have the cornerstones to concentrate on this issue and get good results.”

Representatives from Hewlett-Packard and the involved Georgia Tech units will meet periodically to assess the use of technology in this fashion. Georgia Tech will submit a follow-on request for funding later in 1998 to further expand the effort on campus.

McClellan Earns Outstanding Teaching Awards

Earning the Class of 1940 W. Howard Ector Outstanding Teacher Award, an Institute-wide honor that recognizes excellence in classroom instruction, and being named the 1998 ECE Outstanding Teacher by the graduating seniors made May a memorable month for James H. McClellan.

Due to his use of state-of-the-art technology in the classroom, Dr. McClellan is known as an innovator in electrical and computer engineering instruction, both at Georgia Tech and throughout the world. His development of EE 2200 requires the use of computers and network/CD-ROM multimedia materials both in and out of the classroom. The course evolved into the textbook, DSP First: A Multimedia Approach, by Ronald W. Schafer and Dr. McClellan, both of ECE, and Mark A. Yoder of the Rose-Hulman Institute of Technology.

“Right now, we are entering a phase where computer technology offers a golden opportunity to update the classroom experience and move it away from the traditional chalkboard and lecture method,” said Dr. McClellan. “In effect, we are changing the nature of engineering education, and I consider myself fortunate to be involved in this activity at Georgia Tech, which is becoming a national leader in this area.”

Dr. McClellan has been a professor at Georgia Tech’s School of ECE since 1987.
New Board Members

ECE welcomes two new members to the Advisory Board: Michael B. Bartlett ’97 and Steve W. Chaddick ’74, ’82. Mr. Bartlett is the director of World Wide Bus Solutions in the Mixed Signal DSP Solutions Division of Texas Instruments, Inc. in Dallas, TX. Mr. Chaddick is the senior vice president of Products and Technology at CIENA Corporation in Linthicum, MD. (For related articles, please see pages one and three, respectively.)

ECE Has Friends in Industry

LITHONIA LIGHTING SHOWCASES ILLUMINATION TECHNOLOGY

Each quarter the students in John H. Matthews’ Introduction to Illumination Energy (EE4142) class take a field trip to Lithonia Lighting, the largest lighting equipment manufacturing center in North America. The $1 billion corporation, which has its headquarters in Conyers, GA, opens the doors of both its 30,000-square-foot lighting center, which contains classrooms and displays, and its laboratory to Dr. Matthews’ students.

“One of the very real challenges in teaching a course in illumination engineering is the difficulty of actually demonstrating in a campus environment the technical measurement techniques associated with luminaire photometry, or in allowing students actual hands-on experience with modern lighting system components. By allowing us to visit their training facility, Lithonia has helped fill this void and thereby vastly enhanced the learning experience of our students,” said Dr. Matthews.

“We bring thousands of customers and sales agents through our lighting center each year for seminars,” said Ms. Marsha Burman, director, Marketing, Training, and Development at Lithonia Lighting. “Since Lithonia Lighting is big on training, we have a natural affinity to a university campus. At Lithonia Lighting, we think training is critical.”

In addition to providing an opportunity for students to see first hand the advantages and disadvantages of the various lighting alternatives discussed in EE4142, Lithonia Lighting has committed to providing the lighting equipment for the lighting design and application software laboratory which is a part of Dr. Matthews’ class.

But, Lithonia Lighting’s involvement with Georgia Tech goes beyond educational and training programs. “More Georgia Tech graduates are hired into our marketing program than are students from any other school,” said Ms. Burman. “As a matter of fact, we have successful Georgia Tech alumni throughout all levels of our company in a wide variety of functional areas.”

Lithonia’s laboratory was the first in the United States to receive National Voluntary Lab Accreditation by the National Institute of Standards and Technology. As the leader of complete lighting systems for multi-purpose stadiums, Lithonia Lighting provided the lighting systems for both the Georgia Dome and the Olympic Stadium.
Alumni Recognized at Engineering Award Ceremony

When the College of Engineering held its annual Alumni Awards Ceremony in October, 59 alumni received awards from one of three categories: the Engineering Hall of Fame, the Academy of Distinguished Engineering Alumni, and the Council of Outstanding Young Engineering Alumni. The 12 honorees listed below are ECE graduates.

ENGINEERING HALL OF FAME
Martial A. Honnell, BEE ’34, MSEE ’40, EE ’45
George Nottingham, BEE ’47
Hal B. Tucker, BEE ’49

ACADEMY OF DISTINGUISHED ENGINEERING ALUMNI
C. Dean Alford, BEE ’76
Robert G. Dawson, BEE ’69
John R. Dillon, BEE ’63

COUNCIL OF OUTSTANDING YOUNG ENGINEERING ALUMNI
Alex C. Kelly, BEE ’85
A. Renee Koster, BEE ’87, MSEE ’88
Sheryl Sanders Prucka, BEE ’82, MSEE ’84
Allan D. Ross, BEE ’86, MSEE ’88
Michael L. Wach, BEE ’83, MSEE ’86
Chris Watkins, BEE ’89


INDUSTRIAL DONATIONS ENHANCE STUDENTS’ LAB EXPERIENCES

“Digital design is never a destination; it’s always a journey. To maintain parity with technology in a quality education requires active interest from friends in industry,” said Michael D. Furman, the research scientist who is in charge of ECE’s 2500 and 3500 laboratories. A number of industrial friends have shown their active support of the digital design and computer interfacing laboratories by making significant donations. “These donations have significantly improved the students’ exposure to current technology,” Mr. Furman added.

“Donations from industry have allowed us to incorporate the latest computer equipment, software, and programmable logic technology into our undergraduate laboratories,” said James O. Hamblen, ECE associate professor. “This state-of-the-art technology is very expensive to provide for large numbers of students and is obsolete in just a few years. Without this strong industrial support, it would not have been possible to provide this valuable laboratory experience to our students.”

Intel Corporation has supported ECE’s computer engineering program since the early 1990s. They have consistently given significant in-kind gifts, usually 15-20 state-of-the-art computers each year. Of recent note are 23 Pentium Pro computers and nine 486 computers. Tektronix, Inc. has donated $250,000 worth of equipment at 45 percent of the cost to ECE. This donation to Georgia Tech is the first-of-a-kind donation by Tektronix to any institution, and it far exceeds their normal educational discount. As a result of Tektronix’s gift, ECE’s digital design laboratories now have 20 new oscilloscopes and 12 state-of-the-art logic analyzers. Microsoft Corporation has donated $250,000 this year in software support for ECE’s computer laboratories. This donation has provided the backbone for vendor-product designed software. For several years, Advanced Micro Devices has donated approximately $10,000 per year in upgraded process parts such as programmable logic devices. Motorola Corporation has donated data books to students and logic chips to the labs on a consistent basis for several years, and these gifts in kind have totaled $5,000 each year. Altera Corporation and Xilinx, Inc. have donated hundreds of thousands of dollars worth of synthesis software, equipment, and support chips this past year. 

COLLEGE OF ENGINEERING AWARDS

The College of Engineering has established three awards to honor outstanding alumni.

Engineering Hall of Fame
Membership for the highest honor that can be bestowed on College of Engineering alumni is reserved for individuals who have made sustained and meritorious engineering and/or managerial contributions during their careers.

Academy of Distinguished Engineering Alumni
Membership is reserved for individuals whose contributions to Georgia Tech, the engineering profession and field, and/or society have brought distinction to themselves and the Institute.

Council of Outstanding Young Engineering Alumni
Membership is reserved for alumni under 40 years of age who have demonstrated outstanding professional achievements.

ECE is seeking nominations for these awards. Please send names to Dr. Hans B. Pattegen, School of ECE, Georgia Institute of Technology, Atlanta, GA 30332-0250.
Electronics Industry Leaders Dedicate State-of-the-Art Facilities at Georgia Tech

In a continuing affirmation of the Institute’s role in the State’s economic development, electronics industry leaders, state officials, and researchers gathered for the opening of three Packaging Research Center (PRC) and Manufacturing Research Center (MARC) electronics research facilities—the Next Generation Substrate Laboratory, the Next Generation Module Laboratory, and the Center for Board Assembly Research (CBAR) Laboratory. Featured speakers at the MARC and PRC luncheon and lab dedication on October 23 were Randolph Cardoza, commissioner of the Georgia Department of Industry, Trade and Tourism; William Todd, president of the Georgia Research Alliance (GRA); Jean-Lou Chameau, dean of the College of Engineering; Steven Danyluk, director of the MARC and the Morris M. Bryan, Jr. Chair in Mechanical Engineering for Advanced Manufacturing Systems; Edward W. Kamen, director of CBAR, associate director of the MARC, and Julian T. Hightower Chair in Manufacturing Engineering; and Rao R. Tummala, director of the PRC, Joseph M. Pettit Chair Professor, and GRA Eminent Scholar in Electronics Packaging.

These new facilities, which are housed in the MARC, will allow engineers to create the next generation of semiconductor packaging and printed wiring board assembly. The Next Generation Substrate Laboratory is used for undergraduate, graduate, and industry engineer education, as well as for process research of next generation, high performance, low-cost electronic packages. The Next Generation Module Laboratory provides an environment where substrates can be assembled and electrically tested as a complete system-level board or module. CBAR has more than $3 million of industry-provided equipment and software to establish a state-of-the-art printed wiring board surface mount technology (SMT) assembly line. The SMT line serves as a demonstration testbed for advanced applications-specific software and new developments in process technology, materials, and measurement systems for board assembly.

In total, the laboratories represent a three-year, $30 million investment by the GRA, Georgia Tech, the State of Georgia, the National Science Foundation, and many industrial partners. According to both Dr. Todd and Mr. Cardoza, prudent investment in targeted research areas can have a positive impact on Georgia’s economy, particularly as the global electronics market is projected to grow from $800 billion today to $2 trillion over the next decade. “We must show international companies that Georgia is the place for their future,” Mr. Cardoza said. “It is the place for them to be if they want to be near the most advanced technology and the brightest scholars and researchers in the U.S.A.”

Tummala Honored with the Distinguished Professor Award

ao R. Tummala, Pettit Chair Professor in Electronics Packaging, Georgia Research Alliance Eminent Scholar, and the director of the Packaging Research Center (the largest electronics packaging center in the world), received the 1998 Distinguished Professor Award at the Faculty/Staff Honors Luncheon on May 21.

The award, which comes with a $15,000 prize donated by the Class of 1934, is the most prestigious honor for Georgia Tech faculty. “I am delighted, touched, and feel very honored to receive this award because it is for my academic contributions, in contrast to [previous] awards that I received for my work in industry and professional organizations,” Dr. Tummala said.

Georgia Tech President Wayne Clough described Dr. Tummala as “...a world class scholar who has brought national and international prominence to Georgia Tech. The PRC, under Dr. Tummala’s strong and effective leadership, is the star among such centers in the U.S.”

Describing his approach with students as informal and open, Dr. Tummala believes in treating them like adults and challenging them to be independent thinkers and inventors. He stays in touch with many of his students who have graduated and said, “It makes me feel great when one of them calls for career advice—that they still look to me for help.”
Georgia Tech Electrical Engineer Receives Prestigious Presidential Award

Steven W. McLaughlin, assistant professor in ECE, received a $500,000 Presidential Early Career Award for Scientists and Engineers (PECASE) during a White House ceremony.

John H. Gibbons, science and technology adviser to President Bill Clinton, presented the PECASE awards to 60 young researchers from a variety of disciplines. Established by the President in 1996, the PECASE Award is the highest honor bestowed by the U.S. government on outstanding scientists and engineers who are beginning their careers.

“I am extremely surprised and honored to receive this award. While the award appears to single out individual accomplishments, it is really a tribute to the support I have received from ECE and Georgia Tech,” said Dr. McLaughlin, who came to ECE in 1996, after spending four years at the Rochester Institute of Technology.

A member of ECE’s telecommunications faculty, Dr. McLaughlin will use his $500,000 award over a five-year period to support his research in optical recording systems that are capable of storing information in high-capacity, non-binary formats.

“The storage capacity of compact discs (CDs) is about 680 megabytes on a 4.5-inch disc, and this makes their useful lifespan about 15 years,” said Dr. McLaughlin. “Digital video discs (DVDs) just coming into today’s market have sufficient capacity (up to 17 gigabytes on a 4.5-inch disc) to be useful for an additional 15 years. Both CD and DVD systems currently store about 1 to 1.5 bits in every ‘pit’ stored on the surface of the disc. We are developing techniques that increase the storage density to between 3 to 5 bits per pit, resulting in an overall storage capacity of over 50 gigabytes on the same size disc. As a result, discs will be able to hold much more audio and video information.”

Dr. McLaughlin describes his research as reasonably high risk since his ideas and technologies go against conventional wisdom. Nonetheless, they are of interest to optical recording companies. The National Institute of Standards and Technology funded a $10 million project in which Dr. McLaughlin collaborates with the University of Arizona, Calimetrics, Inc., Energy Conversion Devices, Inc., and Polaroid Corporation to develop high-capacity optical storage media and high-speed data transfer systems for both desktop digital media systems and low-cost portable devices.

Dr. McLaughlin has a strong desire to involve undergraduate and graduate students in research, and he will use his PECASE funds for student assistantships and for maintenance of his communication and information theory laboratory. “I am a strong believer in trying to strike an equal balance between research and undergraduate and graduate teaching. The three go hand-in-hand, and what we bring from the lab to the classroom is essential to getting students where they need to go in their academic and professional careers,” said Dr. McLaughlin.

Hughes Receives Outstanding Service Award

Joseph L.A. Hughes, associate professor and vice chair for computer engineering, received the Institute’s Outstanding Service Award for his efforts to benefit ECE, Georgia Tech, the profession, and the Atlanta community.

“...Professor Hughes has established a record of Institute, professional, and community service that few who have been here for 30 years or more could begin to match,” said William E. Sayle, ECE’s vice chair for undergraduate affairs. “I have watched him come up with and implement one innovative idea after another. He is the person we in ECE call upon when a major educational task needs to be undertaken.”

Dr. Hughes is responsible for student recruitment and advising, curriculum planning, semester conversion, course scheduling, faculty recruiting, and program assessment in computer engineering. In addition to his involvement with the annual Computer Science/Computer Engineering Career Fair and various Institute committees, he serves as an IEEE program evaluator for the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology. He is a judge for the Georgia Science and Engineering Fair and a member of the Georgia Tech chapter of Toastmasters International and the Alliance Theatre Stars.
**New Faculty**

**Madhavan Swaminathan**, Associate Professor  
BE ’85, Regional Engineering College in Tiruchi, India  
MS ’89, Syracuse University  
PhD ’91, Syracuse University  
Area: Computer engineering and electromagnetics  
Previously with Georgia Tech’s Packaging Research Center (PRC) as a research engineer, he continues to serve as the PRC’s manager for design and simulation.

**Paul E. Hasler**, Assistant Professor  
BSE and MS ’91, Arizona State University  
PhD ’97, California Institute of Technology  
Area: Electronic design and applications  
At Caltech, Dr. Hasler was a research assistant in the physics of computation laboratory, where he held a National Institute of Mental Health fellowship.

**David R. DeBoer**, Assistant Professor  
AB ’89, Harvard University (cum laude)  
MS ’89, Georgia Tech  
PhD ’91, Georgia Tech  
Area: Electromagnetics  
Prior to his academic appointment, he was a research engineer in ECE for two years and was a senior scientist at Hughes STX from 1995-96. Dr. DeBoer spends much of his time at the Woodbury Research Facility located southwest of Atlanta.

**Stephen E. Ralph**, Associate Professor  
BEE ’80, Georgia Tech  
PhD ’88, Cornell University  
Area: Optics and photonics  
Dr. Ralph was an assistant professor in the Department of Physics at Emory University. Prior to his position at Emory, Dr. Ralph was a visiting scientist at IBM T.J. Watson Research Center in Yorktown Heights, NY, and a post-doctoral researcher at AT&T Bell (now Lucent Technologies) Laboratories in Murray Hill, NJ.

**Emmanouil M. Tentzeris**, Assistant Professor  
Diploma ’92, National Technical University of Athens, Greece (summa cum laude)  
MSc ’93, University of Michigan at Ann Arbor  
PhD ’97, University of Michigan at Ann Arbor  
Area: Electromagnetics  
Dr. Tentzeris was a graduate research assistant in the radiation laboratory.

**Alford and Joy Retire**

CE professors Cecil O. Alford and Edward B. Joy retired as of July 1, 1998. With the length of their two careers combined, these two men have 58 years of distinguished service to the School (excluding their time as students at Georgia Tech). Faculty and staff members honored Dr. Alford and Dr. Joy at a retirement dinner on May 23.

“Cecil Alford and Ed Joy have been vital members of our faculty for many years,” said Roger P. Webb, ECE chair. “Both have made truly significant contributions to teaching and research, and both embody the unique ‘can do’ character of Georgia Tech. We are pleased that they will both continue to include participation with ECE in their active retirement.”

Dr. Alford earned his BEE and MSEE degrees from Georgia Tech in 1956 and 1960, and his PhD degree in EE from Mississippi State University in 1966. In 1968, he joined Georgia Tech’s ECE faculty as an associate professor and became a full professor in 1979. Dr. Alford led the computer engineering research laboratory that provided research and design for the “Star Wars” military program in the 1980s. He is noted for his work with graduate students, and he was awarded Georgia Tech’s Outstanding Continuing Education Award. Since his retirement, Dr. Alford continues to advise his current graduate students and assist with semester conversion and other School issues.

Dr. Joy has spent his entire academic career at Georgia Tech. After earning his BEE, MSEE, and PhD degrees in EE in 1963, 1967, and 1970, he joined the Georgia Tech ECE faculty as an assistant professor and was promoted to full professor in 1980. He is noted for a flower petal-shaped antenna that earned him an appearance on The Tonight Show in the early 1990s, and for a window curtain antenna that he and his colleagues created. In 1997, Dr. Joy was honored with Georgia Tech’s Outstanding Continuing Education Award. He continues as a course instructor in radar and antenna measurements for the Distance Learning and Continuing Education Department on a part-time basis.
Alumni News

Louie Powell ’69 is currently a consulting engineer and team leader in power systems energy consulting for General Electric in Schenectady, NY. He is also vice president of Power Generation Services. Powell is active in IEEE and was named as a Fellow three years ago.

Richard T. Kent, Jr. (Rich) ’72, ’76 is the deputy director of the Ocala Electric Utility in Ocala, FL.

Robert L. Cody, Jr. ’80 is working as a management consultant in Chicago, IL.

Brian L. Evans ’88 ’93 is an assistant professor at the University of Texas at Austin. He received the NSF CAREER award to support his research in scalable software and hardware for image and video processing systems.

Carl L. Mohre, II ’89 ’90 is a staff engineer with IBM’s Consumer Division. His first patents are forthcoming for the 1996 Aptiva Computer “split-system” design.

Jonathan R. Knight ’90 is with Texas Instruments in Japan working as a design project leader for a servo IC for 2.5 inch HDD applications.

Kyle Klatka ’96 is currently working for GenRad in Cambridge, MA as a technical marketing engineer and is finishing up an economics degree.

Ismail H. Oguzman ’96 is a senior process engineer for National Semiconductor Corporation in Arlington, TX.

Leslie Douglas ’97 is working as a hardware engineer for Prucka Engineering in Houston, TX.

Student News

Lan-Rong Dung was awarded the VHDL International Outstanding PhD Dissertation Award for his thesis, “Conceptual Prototyping of Embedded DSP Systems,” at a ceremony in Washington, D.C. Vijay K. Madisetti, Dr. Dung’s advisor, received the Outstanding Dissertation Advisor Award at the same ceremony.

Jeongwook Kim received the Samsung Humantech Thesis Silver Prize. The award was for his paper, “Adaptive Mobility Management in Wireless Communication Networks,” which was co-authored with his advisor, Dr. Madisetti.

Daniel Leatherwood received a best paper award at the 1997 Antenna Measurement Techniques Meeting and Symposium, held in Boston, MA. The paper, “Range-field Plane Wave Model Determined From Spherical Probing Data,” was written with his PhD advisor, Edward B. Joy.

Kwang Lim Choi was one of 11 students who received an educational grant from the International Microelectronics and Packaging Society for the 1997-98 academic year. His PhD advisor is Madhavan Swaminathan.

J. Scott Rodgers, an ECE graduate student, won a first place finish in the foil category and second place finishes in the épée and sabre categories at the 1997 U.S. National Wheelchair Fencing Championships in Santa Clara, CA.

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Following the Same Tracks, Just a Few Decades Apart...

Kendall L. Su, a Regents' Professor in the School of Electrical and Computer Engineering at the Georgia Institute of Technology, awarded his son, Jonathan, a PhD degree in electrical engineering at Georgia Tech on December 13, 1997. Forty-four years ago, Kendall Su, an internationally known circuit theorist, earned his own PhD degree in electrical engineering from Georgia Tech, where he has been teaching ever since.

Jonathan K. Su, a magna cum laude graduate of Rice University with a BSEE, earned his MS degree from Georgia Tech in 1993 before beginning his doctoral studies in digital signal processing with his advisor, Russell M. Mersereau. In January 1998, Jonathan Su started a two-year research position at the Telecommunications Institute at the University of Erlangen-Nuremberg, Germany.

A special thank you to Mr. and Mrs. Joel S. Spira for their generosity in supporting excellence in teaching by funding the award for the ECE Outstanding Teacher of the Year. Mr. Spira is chair of Lutron Electronics Company, Inc. in Coopersburg, PA, and is a member of the College of Engineering Advisory Board.

Faculty/Staff Awards

Rao R. Tummala was awarded the John Jeppson Medal and Award by the American Ceramic Society for outstanding contributions leading to industry’s first multichip module and was presented with the European Materials Award of the Year by the Deutscher Verband für Materialforschung Society.

William T. Rhodes was named as the director of Research at Georgia Tech Lorraine.

Gary S. May is serving as a consultant to the National Science Foundation (NSF) as a member of the Committee on Equal Opportunities in Science and Engineering.

G. Tong Zhou received a NSF CAREER Award to support her research in the general area of statistical signal processing with emphasis on nonlinear system identification.

Miroslav M. Begovic received the Outstanding Technical Report Award for “System Protection and Voltage Stability,” and Larry T. Coffeen received the Outstanding Standard and Guide Award for “IEEE Standard Techniques for High-voltage Testing” at the IEEE Working Group Recognition Awards.

During the Faculty/Staff Honors Luncheon on May 21, Martin A. Brooke, Elias N. Glytsis, Bonnie S. Heck, Suellen Robertson, and David G. Taylor received Recognition of 10-Year Service awards. Sharon K. Austin received an Outstanding Research Support Personnel Performance Award.