2004-2005 Annual Report

School of Electrical and Computer Engineering

Georgia Tech College of Engineering
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The School of Electrical and Computer Engineering is the largest of nine schools and departments in the College of Engineering and the largest individual school at Georgia Tech. In addition to its headquarters in Atlanta, the School’s scope extends to southeastern Georgia universities via Georgia Tech Savannah and into Europe via Georgia Tech Lorraine.

### Faculty/Staff

- Number of faculty (tenure-track)* ......................................... 116
- Joint appointments................................................................. 4
- Adjunct and part-time faculty ................................................. 51
- Professors Emeriti ................................................................. 22
- Endowed professorships ......................................................... 28
- Georgia Research Alliance Eminent Scholars ......................... 8
- National Academy of Engineering members ......................... 5
- IEEE Fellows .............................................................................. 31
- Optical Society of America Fellows .......................................... 4
- Presidential Early Career Award in Science and Engineering recipients ................................................................. 4
- Academic professionals ......................................................... 15
- Research faculty/personnel .................................................... 131
- Administrative staff ................................................................... 47

### Students

#### Degrees Awarded**

- B.S.Cmp.E ....................................................................................... 149
- B.S.E.E .............................................................................................. 236
- M.S. ................................................................................................ 50
- M.S.E.C.E. ......................................................................................... 180
- Ph.D. ................................................................................................ 83
- Total................................................................................................ 698

#### Undergraduate Students (Fall Semester 2004)

- Electrical engineering ............................................................. 926
- Computer engineering ............................................................ 611
- Total .............................................................................................. 1,537

#### Graduate Students (Fall Semester 2004)***

- Doctoral .......................................................................................... 580
- Special ............................................................................................. 7
- Master of Science/M.S.E.C.E. ....................................................... 288
- Total ................................................................................................ 875

### Grants and Contracts

- Total funds received on external grants during FY 05.......................... $51,152,067
- Number of proposals submitted to external agencies during FY 05 ...................... 335

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*Total includes Georgia Tech Savannah ECE faculty

**Graduate program offers combined electrical and computer engineering degrees

***Graduate degrees awarded totals include online master’s/video and Georgia Tech Lorraine graduates
Gary S. May Named Steve W. Chaddick School Chair of ECE

On May 1, 2005, Gary S. May took the helm at ECE as the Steve W. Chaddick School Chair. Previously, Dr. May was the executive assistant to Georgia Tech President G. Wayne Clough, where he served as the president’s chief liaison, and the Motorola Foundation Professor in the School of ECE.

Coming into the School’s top leadership role, Dr. May’s priorities include increased focus on development and communications activities, enhanced and increased diversity of the ECE student body and faculty, creation of more hands-on engineering activities earlier in the undergraduate program, and more faculty pursuit of research commercialization and entrepreneurial activities.

Dr. May’s research and educational interests are in computer-aided manufacturing of integrated circuits. The author of over 200 technical publications, he has written one textbook, *Fundamentals of Semiconductor Fabrications*, and contributed to portions of 14 additional books. Dr. May has graduated 14 Ph.D. students who work at the world’s leading universities, research institutes, and electronics companies. Through individual and collaborative efforts, he has acquired over $49 million in research funding from both governmental agencies and corporations, and he is a longstanding participant in the Packaging Research Center. From 1994-2001, he was on the editorial board for the prestigious *IEEE Transactions on Semiconductor Manufacturing*, with the last four years spent as editor-in-chief.

A tireless advocate for minority engineering education, Dr. May founded and leads two highly successful Georgia Tech initiatives—the Summer Undergraduate Research in Engineering/Science Program and the Facilitating Academic Careers in Engineering and Science Program—that have secured a combined $12 million of support from the National Science Foundation. While SURE motivates underrepresented minority undergraduates to consider graduate studies in engineering and science, FACES encourages graduate-level minority students to pursue doctorates and academic careers in these areas. Additionally, Dr. May serves on the national advisory board of the National Society of Black Engineers and is the vice chair for the National Science Foundation’s National Advisory Committee for Engineering.

**CAREER HIGHLIGHTS**

**Education**

B.E.E., Georgia Tech, 1985
M.S. E.E.C.S., University of California at Berkeley, 1988

**ECE and Georgia Tech**

Assistant Professor, 1991-95
Founder and Director, Summer Undergraduate Research in Engineering/Science Program, 1992-present
Associate Professor, 1995-2000
Founder and Director, Facilitating Academic Careers in Engineering and Science, 1998-present
Professor, 2000
Motorola Foundation Professor, 2001-05
Associate Chair for ECE Faculty Development, 2001-02
Executive Assistant to Georgia Tech President G. Wayne Clough, 2002-05
Steve W. Chaddick School Chair of ECE, 2005-
Dear Colleagues,

Since its creation in 1896, the School of Electrical and Computer Engineering has been an integral part of Georgia Tech. During 2004-05, the School of ECE continued on its course of growth and innovation. Our research awards totaled a record-breaking $51.1 million, a $5 million increase from just over $46 million in FY 04, and represented a wide spectrum of activity from homeland security and deep space exploration to renewable energy sources and unmanned aerial vehicle testing and development.

Industrial-academic partnership was stronger than ever in individual faculty research efforts and in research centers. The new Samsung Design Center, housed at the Georgia Electronic Design Center, is an example of such collaboration. Our knack for entrepreneurialism is illustrated by CardioMEMS, an Advanced Technology Development Center company started by ECE faculty member Mark Allen, which is pioneering a new breed of testing devices to monitor patients with heart problems.

On the educational front, we graduated 385 undergraduate students (including 27 at GT Savannah), 230 master’s students, and 83 Ph.D. students. We have also expanded our efforts through the creation of new international education programs and a concentrated focus on K-12 outreach to promote engineering and science education and career opportunities.

Recognition of ECE faculty members in terms of prestigious awards and other forms of recognition also reflected this high level of quality. Four faculty members were named IEEE Fellows, and four others received Institute-level awards— including Georgia Tech’s most recent Class of 1934 Distinguished Professor Award recipient, Tom Gaylord. Many students also received noteworthy recognitions, as Anthony Hylick and John Parish who were named Gates Cambridge and Goldwater scholars, respectively. These indicators were also acknowledged by external sources, as U.S. News and World Report now ranks both our electrical engineering and computer engineering graduate programs sixth in the nation.

In short, ECE blends the theoretical with the practical—a philosophy that has characterized Georgia Tech since its inception. We are extremely proud of our outstanding faculty and students, and the ECE Advisory Board and our many corporate, individual, and foundation partners provide support in so many ways that are invaluable to our success. By working together, we are producing a culture of innovation and leadership that is vital to defining Georgia Tech as the preeminent 21st century research university.

I began my service as the Steve W. Chaddick School Chair of ECE in May 2005, and these stellar accomplishments are a testament to both the outstanding faculty in ECE and the leadership of my predecessor, Roger P. Webb. It is a tremendous privilege to lead ECE, and I look forward to many positive, productive years ahead.

Gary S. May
Steve W. Chaddick School Chair
John D. Cressler, Byers Professor in the microsystems area, received major new funding for his research in FY 05. His project, "Silicon-Germanium Integrated Electronics for Extreme Environments," was funded by NASA for $14 million over the next four years and involves eight different university/industrial team members beyond Georgia Tech. The group is developing SiGe technology for electronics systems for NASA to use in lunar and Martian exploration and in interplanetary probes. Besides the advantages of low cost, high integration capability, and high speed, SiGe devices are ideally suited for space applications because of their natural radiation hardness, a key concern for all space electronics, and importantly their ability to operate in space’s cryogenic temperatures, which are as cold as -230°C (43K) on the surface of the moon.

For the fourth consecutive year, ECE broke records in both research grants and contracts and research proposal activity. In FY 2005, ECE faculty acquired $51,152,067 in research grants and contracts, which represented 39 percent of the research funding in the College of Engineering, 18 percent of Georgia Tech awards except those of Georgia Tech Research Institute, and 11 percent of all Georgia Tech sponsored awards, including GTRI.

During FY 2005, ECE faculty members submitted 335 proposals, totaling $159,174,291, to various governmental agencies and industrial sources. These totals include research dollars acquired and proposed by ECE faculty in Atlanta, the Microelectronics Research Center, the Georgia Tech Broadband Institute, ECE faculty based at Georgia Tech Savannah, and the Georgia Electronic Design Center.

Additionally, ECE faculty had an extremely productive year in publishing their research in top academic journals and presenting their work at conferences and workshops around the world. In FY 05, ECE faculty members produced 5 books, 317 refereed journal papers, 606 refereed conference papers, 66 invited conference papers, 138 keynote addresses, and 86 patents or records of invention.

NASA, ECE Create Electronics for Extreme Environments

John D. Cressler holds a 200 GHz silicon-germanium integrated circuit wafer at a cryogenic probe station capable of measuring temperatures to 200 degrees below zero Celsius.
Moving on...  

Roger P. Webb Retires after 41 Years of Service

On January 21, 2005, the Georgia Tech community honored Roger P. Webb, Steve W. Chaddick School Chair, and his 41 years of service to ECE and the Institute.

Dr. Webb’s unassuming yet extraordinary style of servant-leadership enabled faculty to achieve many great things. During his tenure as school chair, ECE faculty established 15 new research centers and extended the School’s global and regional reach to Georgia Tech Lorraine in France and to Georgia Tech Savannah. Grants and contracts acquisition quadrupled from $10.1 million in 1990 to $46 million in 2004, and doctoral degree production grew from 28 in 1990 to 105 in 2004.

“Roger had an exceptional ability to ignite the entrepreneurial spirit in his faculty and to let them pursue their ‘thing’ freely, without any artificial restraint,” said Hans B. Pütgen, associate chair for External Affairs. “He found talent, directed it, and then let it grow.” Indeed, Dr. Webb has surpassed the test of a true leader—to leave others with the ability, conviction, and dedication to continue in their quests for excellence and discovery.

Items in gold indicate Dr. Webb’s individual achievements. Items in black are milestones and accomplishments that took place during 1990-2004.

| 61-63 | Georgia Tech Fellow |
| 63 | Assistant Professor at Tech (20th faculty member) |
| 64 | PhD, Georgia Tech |
| 67 | Promoted to Associate Professor |
| 69 | Director, IEEE Atlanta Section |
| 72-01 | Georgia Power Distinguished Professor: Coordinated efforts in instructional and research program development in electric power engineering |
| 74 | Promoted to Professor |
| 78 | ECE Associate Director |
| 83 | Edison Electric Institute Power Engineering Educator Award |
| 86 | IEEE Fellow |
| 88-89 | Vice Chair, IEEE Atlanta Section |
| 89-90 | Treasurer, IEEE Atlanta Section |
| 90 | Chair, IEEE Atlanta Section |
| 91 | ECE Acting Director |
| 90-04 | ECE School Chair |
| 90 | Joseph M. Pettit Microelectronics Research Center is formally dedicated |
| 90 | Member, Electrical and Computer Engineering Department Heads Association (formerly NEEDHA) |
| 90 | Member, Southeastern Center for Electrical Engineering Education |
| 90 | Southeastern Association of Electrical Engineering Department Heads |
| 90 | College of Computing Building opens, housing telecommunications and computer engineering faculty |
| 91 | Georgia Tech Lorraine—located in Metz, France—officially opens its doors as the Institute’s European platform campus |
| 91 | The Manufacturing Research Center opens, housing ECE faculty and lab space in manufacturing-related areas |
| 92 | The U.S. Department of Energy (DOE) establishes the University Center for Excellence in Photovoltaics Research and Education (UCEP) |
| 92 | Georgia Tech Summer Undergraduate Program of Research in Electrical Engineering for Minorities is created (now known as Georgia Tech Summer Undergraduate Research in Engineering/Science Program) |
| 93 | The School of Electrical Engineering is renamed the School of Electrical and Computer Engineering |
| 93 | Metro Atlanta Engineers: Engineer of the Year in Education Award |
| 94 | The National Science Foundation establishes the Packaging Research Center as one of its first Engineering Research Centers |
| 96 | The National Electric Energy Testing, Research, and Applications Center is founded. The Center also has a R & D facility in Forest Park, Ga. |
| 96 | Roof-top photovoltaic power system begins operation at the Georgia Tech Aquatics Center, in time for the 1996 Summer Olympics |
| 96 | The Georgia Centers for Advanced Telecommunications Technology Building opens its doors to house faculty in telecommunications and digital signal processing |
| 96-97 | ECE celebrates 100 years on the Georgia Tech campus |
| 97 | ECE takes the lead role in an Institute-wide initiative to develop computer-enhanced education, most notably via the World Wide Web |
| 97 | Steven W. McLaughlin receives a Presidential Early Career Award for Scientists and Engineers during a White House ceremony |
| 99 | Texas Instruments Analog Graduate Fellows Program is established |
| 99 | The Georgia Tech Wireless Institute (now known as the Georgia Tech Broadband Institute) is created |
| 99 | The joint Georgia Tech Lorraine-Centre National de la Recherche Scientifique (GTL-CNRS) Laboratory is inaugurated in Metz, France |
| 99 | President, Electrical and Computer Engineering Department Heads Association |
| 99 | The Georgia Tech Regional Engineering Program opens in Savannah, Ga. |
| 99 | The Yamacraw Mission, a strategic economic development initiative in broadband telecommunications that enabled ECE to hire 26 new faculty members, was launched |
| 99 | Georgia Tech is named as one of three inaugural members of the Texas Instruments DSP Leadership Universities Program |
| 99 | ECE and other engineering students begin participating in FutureTruck, a nationwide, university-level competition to transform a traditional SUV into a low-emission, high-efficiency hybrid electric vehicle |
| 99 | Parker H. Pleit (Biology Building opens, housing some ECE bioengineering faculty |
| 00 | ECE Capital Campaign ends with a final total of $71,966,527, 10 percent of the Institute’s total |
| 00 | IEEE Millennium Medal Recipient |
| 00 | The Center for Research in Embedded Systems and Technology is established |
| 00 | 15 ECE faculty members receive IEEE Millennium Medals |
| 01 | ECE online master’s program introduced |
| 01 | Chair, Southeastern Center for Electrical Engineering Education (to present) |
| 01 | ECE Chair renamed Steve W. Chaddick School Chair |
| 01 | Board of Directors, International Engineering Consortium (to present) |
| 02 | Ali Adibi receives a David and Lucile Packard Fellowship for Science and Engineering |
| 02 | IEEE student branch named largest in the world |
| 02 | Technology Square Research Building and Centery Building open, housing ECE faculty in various disciplines and start-up company activities |
| 02 | The Arthurus Center for Distributed Engineering Education is formally established |
| 03 | Georgia Tech Savannah campus opens |
| 03 | Russell D. Dupuis receives the 2002 National Medal of Technology from U.S. President George W. Bush at a White House ceremony |
| 03 | U.A. Whitaker Building opens, housing ECE bioengineering faculty |
| 03 | Georgia Governor Sonny Perdue announces plans to create a Nanotechnology Research Center at Georgia Tech |
| 03 | National Nanotechnology Infrastructure Network names Georgia Tech as one of 13 participating universities |
| 04 | Georgia Tech College of Engineering Hall of Fame |
| 04 | Travels to India to discuss Georgia Tech presence in that country |
| 04 | Special assistant to the provost/vice president of Academic Affairs on issues of strategic importance to the Institute, including Georgia Tech’s Strategic Energy Initiative |

“Certainly, Roger Webb did not achieve all of this by himself. However, he did enable and empower people to pursue and achieve very lofty goals.”

– Professor and Associate Chair Emeritus J. Alvin Connelly
Christopher W. Klaus Advanced Computing Building

Construction on the Christopher W. Klaus Advanced Computing Building, located on Ferst Drive, began in February 2004 and is due for completion in April 2006. The building, comprised of 135,000 assignable square feet, will house research and classroom labs, faculty offices, classrooms, a 200-seat auditorium, and an integrated parking structure accommodating 540 vehicles. The building will house approximately 34 faculty members from ECE.

Nanotechnology Research Center Building

The Nanotechnology Research Center Building, to be located at the intersection of Ferst Drive and Atlantic Drive, is nearing the end of its design phase. Construction is due to begin in May 2006, with completion slated for March 2008. This facility is composed of 90,000 assignable square feet, including a 30,000-square foot, tri-level clean room, and will contain additional state-of-the-art clean room laboratories to support education, research, and economic development activities associated with microelectronics, medicine, pharmaceuticals, nanoscience, and nanotechnology. ECE faculty will be among a host of interdisciplinary researchers using this facility.

Georgia Tech Savannah

The Technology and Engineering Campus is the home of Georgia Tech Savannah. Ten ECE faculty members are housed in two facilities—the Economic Development and Research Building (EDRB), which provides faculty and administrative offices, classrooms, instructional and research laboratories, and business incubator space—and the Program Administration and Resource Building, which contains offices, conventional and distance-learning classrooms, telecollaboration studios, senior design studios, student computer labs, the student lounge, and the GTS library.

Enrollment (Fall 2004)  Degrees Awarded
B.S.E.E.  37  B.S.E.E.  18
B.S.Cmp.E.  23  B.S.Cmp.E.  9
M.S./M.S.E.C.E.  2
Ph.D.  9
Georgia Tech Lorraine

Georgia Tech Lorraine was the Institute’s first international campus. Since opening in 1991, more than 70 faculty members from Georgia Tech’s Atlanta campus have been assigned to GTL for varying periods of time. Almost 250 graduate students in ECE, computer science, and mechanical engineering are regularly enrolled and seek degrees from not only Georgia Tech, but from partner European institutions under double degree programs.

ECE Enrollment (Fall 2004)

<table>
<thead>
<tr>
<th>Degree</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctoral</td>
<td>10</td>
</tr>
<tr>
<td>Master of Science/M.S.E.C.E.</td>
<td>33</td>
</tr>
</tbody>
</table>

Georgia Tech India

In December 2004, ECE Professor Vijay Madisetti led the delegation that discussed the potential of a Georgia Tech presence in India. The group met with academic, government, and industry leaders in Bangalore, Chennai, Hyderabad, and Mumbai and included ECE Professors Roger P. Webb, Rao R. Tummala, and Nikil Jayant.

The mission is to provide Tech students and faculty with academic, research, and cultural opportunities and allow Indian students and faculty to explore the diversity of Georgia Tech via an exchange program. This collaboration will also encourage economic development and commercialization for both areas.

Georgia Tech China

Led by G. Tong Zhou of ECE and Haizheng Li from the Ivan Allen College School of Economics, 44 students (10 from ECE) enrolled in the Shanghai Summer Program. The undergraduate program was centered at Shanghai Jiaotong University in Shanghai, China.

Chinese language, engineering, humanities, and social sciences courses, as well as opportunities for undergraduate research were provided. Monson H. Hayes, a professor in ECE’s DSP group, taught ECE and industrial engineering courses. In addition to taking a normal load of three classes from those offerings, students also enrolled in complimentary non-credit courses offered by SJTU in Chinese cooking, Chinese painting, Chinese calligraphy, and Taijiquan (or Tai Chi).

SJTU is a leading engineering university comprised of several campuses, with 2,800+ faculty and nearly 38,000 full-time students. The Xuhui campus, located in the center of the city, was home to the 2005 Shanghai Summer Program. Starting in May 2006, a Georgia Tech-SJTU dual master’s degree program in ECE will be offered, thus adding a graduate program component to GT China.

In fall 2005, Georgia Tech launched a new International Plan offering students a multicultural dimension to their undergraduate experience. ECE has played a key role in past development of global educational initiatives and is poised for even more future growth in this critical area.
STUDENT AWARDS

Outstanding ECE Sophomore Award
R. Reeve Ingle
Eta Kappa Nu, the honor society for ECE, honored the sophomore electrical or computer engineering student with the highest scholastic average by presenting a plaque and a check for $250 from Milliken.

ECE Junior Scholar Award
G. Wallace Tennille
This award was presented to the student who has junior standing and has the highest GPA in ECE. The recipient was awarded a $250 check from Milliken and a plaque.

ECE Undergraduate Research Award
George Cadena
This award recognized an undergraduate student who has demonstrated an unusually strong aptitude for research. The recipient was awarded a $250 check from Milliken and a plaque.

Most Outstanding ECE Senior Co-op Award
Benjamin Alexander Johnson
This award was presented to the ECE co-op student who is considered of the highest caliber by their co-op employer. The recipient was awarded a $250 check and a plaque. Funding for this award was provided by Mr. Warren Batts (BEE ’61).

Outstanding Service to Georgia’s Community Award
Michael Rivera
Investing time in community activities can have significant rewards for Georgia Tech in the future, and recognizing students who participate in and organize such activities helps to motivate other students to do the same. The recipient was awarded a $250 check and a plaque.

ECE Faculty Award
Anita Chow
This award was given to the electrical or computer engineering student who, in the opinion of the ECE faculty, has done the most to improve the educational environment within ECE or Georgia Tech and has contributed significantly to both student welfare and student-faculty interactions. The recipient was awarded a $250 check and a plaque.

Outstanding Electrical Engineering Senior Award
Irene Chow
Eta Kappa Nu, the honor society for ECE, honored the senior electrical engineering student who has a very high scholastic average and who plays an active role in extra-curricular activities. The award consisted of a plaque, engraving the name of the individual on a plaque in the Van Leer (ECE) Building, and awarding a check for $750 from Framatome ANP.

Outstanding Computer Engineering Senior Award
Vikram Raj
Eta Kappa Nu, the honor society for ECE, honored the senior computer engineering student who has a very high scholastic average and who plays an active role in extra-curricular activities. The award consisted of a plaque, engraving the name of the individual on a plaque in the Van Leer (ECE) Building, and awarding a check for $750.

ECE Senior Scholar Award
Justin Klooos
This award consisted of a plaque that is given to the electrical or computer engineering senior(s) with the highest academic average.

2005 ECE Award Winners

On April 28, 2005, ECE celebrated the end of the academic year by holding its fourth annual awards program. C. Dean Alford (BEE ’76) and C. Meade Sutterfield (BEE ’72), both members of the ECE Advisory Board, hosted the event, which honors the students, staff, and faculty who have shown exceptional dedication to their professions and studies, ECE, Georgia Tech, and the community as a whole.

This program was supported in part by the Honorable Daniel A. Webster, Florida State Senator representing the 9th District; Warren M. Batts (BEE ’61); Framatome ANP, an AREVA and Siemens Company; and Milliken.

Colonel Oscar P. Cleaver Awards
Jinyu Li
Mohanned Sinnokrot
These awards were made to the outstanding graduate student(s) in ECE, as determined by scores made on the doctoral preliminary examinations during 2004-05. Each recipient received a cash award and a plaque.

ECE Graduate Teaching Assistant Excellence Award
Joseph Lee
Teaching undergraduates is one of ECE’s most important missions. Teaching assistants are necessary to ensure that every student has the opportunity for personal attention during their course of study. The recipient was awarded a $500 check and a plaque. Funding for this award was provided by Mr. Warren Batts (BEE ’61).

ECE Graduate Research Assistant Excellence Award
Omid Momtahan
Hossein Pishro-Nik
Research is the cornerstone to ECE’s success. Nurturing bright and hardworking graduate research assistants (GRAs) are among the most important factors in ensuring that ECE remains a leader in the research community. These awards were given to the GRAs who have demonstrated particular excellence in performing their duties. The recipients were each awarded a $500 check and a plaque.

STAFF AWARDS

Hats Off Performance Award
James Steinberg, Christine Sun
These awards, each consisting of a $1,000 check and a plaque, recognized the classified staff members who have demonstrated exceptional job performance and/or service to ECE above and beyond the call of duty.

Research Spotlight Award
Thomas Champion
This award was presented to a researcher who has made a significant contribution to research efforts in ECE. The awardee received a $1,000 check and a plaque.

Academic Spotlight Award
Ramzy Obaid
This award was presented to the researcher, classified employee, or general faculty member who has made a significant contribution to the ECE teaching or academic program. The awardee received a $1,000 check and a plaque.

FACULTY AWARDS

Outstanding Junior Faculty Member Award
W. Alan Doolittle
Magnus Egerstedt
These awards, each consisting of a $1,000 check and a plaque, recognized the most outstanding assistant professors during 2004-05.

Distinguished Faculty Achievement Award
Ian F. Akylidiz
This award, consisting of a $5,000 check and a plaque, was presented to the senior faculty member who has made

In honor of Roger P. Webb, the ECE Advisory Board is endowing the ECE Awards Program. See details on page 31.
STUDENT BODY PROFILE (Based on Fall 2004 Enrollment)

The official ECE student enrollment totaled 2,412, which represents all full-time and part-time undergraduate and graduate students engaged as of October 2004. Enrollments are also shown for ECE’s undergraduate and graduate programs at remote campuses. The Georgia Tech Regional Engineering Program at Georgia Tech Savannah offers undergraduate and graduate degrees in four areas–civil, computer, electrical, and mechanical engineering. In fall 2004, 71 students were enrolled in electrical and computer engineering programs, making up the majority of students at GTS. Georgia Tech Lorraine, the Institute’s platform campus into Europe, offers graduate degrees in both ECE and mechanical engineering, with a total of 43 students engaged. The online master’s/video program had a total of 84 students as of fall 2004.

<table>
<thead>
<tr>
<th>Enrollment</th>
<th>Total</th>
<th>Asian</th>
<th>Black</th>
<th>Hispanic</th>
<th>American Indian/Alaskan Native</th>
<th>White</th>
<th>Multi-Racial</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.S.E.E.</td>
<td>926</td>
<td>311</td>
<td>122</td>
<td>33</td>
<td>3</td>
<td>453</td>
<td>4</td>
<td>112</td>
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<tr>
<td>B.S.Cmp.E.</td>
<td>611</td>
<td>170</td>
<td>54</td>
<td>35</td>
<td>1</td>
<td>344</td>
<td>7</td>
<td>45</td>
</tr>
<tr>
<td>Total</td>
<td>1,537</td>
<td>31%</td>
<td>12%</td>
<td>4%</td>
<td>&gt;1%</td>
<td>52%</td>
<td>&gt;1%</td>
<td>10%</td>
</tr>
<tr>
<td>M.S./M.S.E.C.E.</td>
<td>288</td>
<td>77</td>
<td>17</td>
<td>14</td>
<td>0</td>
<td>172</td>
<td>8</td>
<td>33</td>
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<tr>
<td>Special</td>
<td>7</td>
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<td>1</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ph.D.</td>
<td>580</td>
<td>332</td>
<td>29</td>
<td>20</td>
<td>1</td>
<td>195</td>
<td>3</td>
<td>64</td>
</tr>
<tr>
<td>Total</td>
<td>875</td>
<td>47%</td>
<td>5%</td>
<td>4%</td>
<td>&gt;1%</td>
<td>42%</td>
<td>&gt;1%</td>
<td>11%</td>
</tr>
<tr>
<td>Grand Total</td>
<td>2,412</td>
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</table>

The average entering...

**Freshman Electrical Engineering Student**
- High school GPA: 3.72
- SAT verbal score: 640
- SAT math score: 710

**Freshman Computer Engineering Student**
- High school GPA: 3.7
- SAT verbal score: 635
- SAT math score: 695

**Average Entering Master’s Student**
- Undergraduate GPA: 3.66
- GRE analytical score: 665
- GRE quantitative score: 754
- GRE verbal score: 516

**Average Entering Doctoral Student**
- Undergraduate GPA: 3.58
- GRE analytical score: 734
- GRE quantitative score: 781
- GRE verbal score: 582
Gates Cambridge Scholarship
Anthony Hylick, a senior computer engineering major, began studies at England’s University of Cambridge in fall 2005 as a winner of the highly esteemed Gates Cambridge Scholarship. Mr. Hylick is the third Georgia Tech recipient of this prestigious award, created by Microsoft founder Bill Gates, and was one of approximately 100 students chosen from an international pool of candidates during spring 2005.

Mr. Hylick, who graduated in August 2005, will use this award to study for a Ph.D. in computer science, specifically in the area of reconfigurable computer architecture, techniques, and designs.

Goldwater Scholarship
John Parish, a junior electrical engineering major, was chosen as one of 320 recipients of the Barry Goldwater Scholarship Program in March 2005. Named in honor of the former Arizona senator, the Barry M. Goldwater Scholarship Program fosters and encourages outstanding students to pursue careers in mathematics, natural sciences, and engineering.

A co-op student with the U.S. Department of Defense, Mr. Parish spent summer 2005 working with Byers Professor Steven W. McLaughlin on developing a method for encrypting communications that will be able to withstand the growing power of computers to crack them. As for his future plans, Mr. Parish plans to earn a doctorate and pursue a research career.

Student Honors

Goldwater Scholarship
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Sigma Xi Honors
Raviv Raich received a Best Ph.D. Thesis Award for his thesis entitled “Nonlinear System Identification and Analysis with Applications to Power Amplifier Modeling and Power Amplifier Predistortion.” Dr. Raich graduated with his Ph.D. in spring 2004. His Ph.D. advisor was G. Tong Zhou. Dr. Raich is currently a postdoctoral fellow in the Department of Electrical Engineering and Computer Science at the University of Michigan at Ann Arbor.

Siavash Pourkamali received a Best M.S. Thesis Award for his thesis entitled “Electrically-Coupled MEMS Bandpass Filters.” He graduated with his M.S. in spring 2004. Mr. Pourkamali’s M.S. advisor was Farrokh Ayazi. Mr. Pourkamali is continuing his studies on the Ph.D. level in Dr. Ayazi’s group.

Industry Awards
Aravind Velayutham received Motorola’s University Partnership in Research Award, presented by the company’s Science Advisory Board Associates. Mr. Velayutham, a Ph.D. student who is advised by Raghupathy Sivakumar, received the award for his presentation, “TP: A Run-time Reconfigurable Transport Layer Framework for Mobile Devices.”

Alenka Zajic received the Daniel E. Noble Fellowship Award, presented jointly by Motorola and the IEEE Vehicular Technology Society to promote graduate-level study in vehicular technology. Ms. Zajic’s Ph.D. advisor is Gordon L. Stuber.
PH.D. STUDENTS GRADUATED

Eighty-three students graduated with their doctoral degrees in 2004-05. Students are grouped by semesters of graduation; their advisors, thesis titles, and employment status are also listed.

Summer 2004

Amer Atrash
Hertling
Data Bus Deskewing Systems in Digital CMOS Technology
Technical staff, Automotive Group of Texas Instruments, Dallas, Tex.

Joshua Bergman
Laskar
Development of Indium Arsenide Quantum Well Electronic Circuits

Santithorn Bunchua
S. Wills
Fully Distributed Register Files for Heterogeneous Clustered Microarchitectures
Assistant professor, Assumption University, Bangkok, Thailand

Fatma Caliskan
Peterson
Electromagnetic Analysis of Planar Layered Structures
Signal integrity engineer, Intel, Chandler, Ariz.

José Gonzalez
Mesereau
Image and Texture Analysis Using Biorthogonal Angular Filter Banks
Assistant professor, Department of Electrical Engineering, University of Texas at El Paso

Luis Gutierrez Zea
Vachtsevanos
Adaptive Mode Transition Control Architecture with an Application to Unmanned Aerial Vehicles
Professor, Universidad Pontificia Bolivariana, Medellin, Colombia

Tyson Hall
Anderson
Field-Programmable Analog Arrays: A Floating-Gate Approach
Assistant professor, School of Computing, Southern Adventist University, Collegedale, Tenn.

Hung Yun Hsieh
Sivakumar
Addressing Network Heterogeneity and Bandwidth Scarcity in Future Wireless Data Networks
Assistant professor, Department of Electrical Engineering and Graduate Institute of Communications Engineering, National Taiwan University, Taipei, Taiwan

Jeng Shiiann Jiang
Ingram
Measurement, Modeling, and Performance of Indoor MIMO Channels
Senior algorithm engineer, Himax, Inc., Taipei, Taiwan

Shantanu Kangude
Copeland
CSMA with Implicit Scheduling through State-Keeping: A Distributed MAC Framework for QoS in Broadcast LANs
Electrical design engineer, Texas Instruments, Dallas, Tex.

Woopoung Kim
Swaminathan
Development of Measurement-Based Time-Domain Models and Its Application to Wafer Level Packaging
Design engineer, Rambus, Inc., Los Altos, Calif.

Sven Krasser
Owen
Adaptive Measurement-Based Traffic Engineering in Packet-Switched-Radio Access Networks
Postdoctoral fellow, School of ECE, Georgia Institute of Technology, Atlanta, Ga.

Nancy List
Williams
Low-Complexity Interleaver Design for Turbo Codes
Staff, MIT Lincoln Laboratory, Lexington, Mass.

Aravind Nayak
Barry
Iterative Timing Recovery for Magnetic Recording Channels with Low Signal-to-Noise Ratio
System architect, Agere Systems, Longmont, Colo.

Seung-Jong Park
Sivakumar
Energy-Aware Topology Control and Date Delivery in Wireless Sensor Networks
Assistant professor, Department of Computer Science, Louisiana State University, Baton Rouge, La.

Youngsheel Park
Kenney
Adaptive Digital Predistortion Linearization of Frequency Multiplier for Dual-Band Transmission Systems
Senior engineer, Samsung Electronics, Seoul, South Korea

Kyeong Keol Ryu
Mooney
Automated Bus Generation for Multi-Processor SOC Design
Samsung, South Korea

Susanta Sengupta
P. Allen
Technology-Independent CMOS Op Amp in Minimum Channel Length
Research engineer II, School of ECE, Georgia Institute of Technology, Atlanta, Ga.

Joon Hyun Sung
Barry
Transmitter Strategies for Closed-Loop MIMO-OFDM
Research staff, Samsung Advanced Institute of Technology, Suwon, South Korea

Narayanan Varadarajan
Barry
The Design of Linear Space Time Codes for Quasi Static Flat Fading Channels
Electrical design engineer, Texas Instruments, Dallas, Tex.
<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jaikrishna Venkatesan</td>
<td>Scott</td>
<td>Investigation of the Double-Y Balun for Feeding Pulsed Antennas</td>
</tr>
<tr>
<td>Ricardo Villalaz</td>
<td>Gaylord</td>
<td>Volume Grating Couplers for Optical Interconnects Analysis, Design, Fabrication, and Testing</td>
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<td>Zhijie Xiong</td>
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<td>Radio Frequency Low Noise and High Q Integrated Filters in Digital CMOS Processes</td>
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<tr>
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<td>Role and Location</td>
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<tr>
<td>Paul Smith</td>
<td>Hasler</td>
<td>Engineer (and co-founder), GTronix, Fremont, Calif.</td>
</tr>
<tr>
<td>Indal Song</td>
<td>Brooke</td>
<td>Employed in South Korea</td>
</tr>
<tr>
<td>Bortecene Terlemez</td>
<td>Brooke</td>
<td>Cypress Semiconductor, Istanbul, Turkey</td>
</tr>
<tr>
<td>Xiangdong Xuan</td>
<td>Chatterjee</td>
<td>Test engineer, Texas Instruments, Dallas, Tex.</td>
</tr>
<tr>
<td>Sangwoong Yoon</td>
<td>Laskar</td>
<td>Senior design engineer, RF Micro Devices, Billerica, Mass.</td>
</tr>
<tr>
<td>Hua Zhang</td>
<td>Li</td>
<td>SkyWorks Solutions, Inc., Irvine, Calif.</td>
</tr>
<tr>
<td>Christopher Alivino</td>
<td>Yezzi</td>
<td>Research scientist, Siemens Corporate Research, Princeton, N.J.</td>
</tr>
<tr>
<td>Volkan Cevher</td>
<td>McClellan</td>
<td>Postdoctoral fellow, School of ECE, Georgia Institute of Technology, Atlanta, Ga.</td>
</tr>
<tr>
<td>Ravi Chawla</td>
<td>Hasler</td>
<td>Engineer, Silicon Labs, Austin, Tex.</td>
</tr>
<tr>
<td>Elizabeth Chesnutt</td>
<td>Barry</td>
<td>Senior systems engineer, OnStar, Troy, Mich.</td>
</tr>
<tr>
<td>Yuvraj Dhillon</td>
<td>Chatterjee</td>
<td>Research engineer, Intel, Hillsboro, Ore.</td>
</tr>
<tr>
<td>Abdulkadir Diril</td>
<td>Chatterjee</td>
<td>Hardware engineer, NVIDIA, Santa Clara, Calif.</td>
</tr>
<tr>
<td>Thayne Edwards</td>
<td>Frazier</td>
<td>Postdoctoral fellow, Department of Bioengineering, University of Washington, Seattle, Wash.</td>
</tr>
<tr>
<td>Majid Fozunbal</td>
<td>Schafer</td>
<td>Technical staff, Hewlett-Packard Laboratories, Palo Alto, Calif.</td>
</tr>
<tr>
<td>Ana Elisa Goulart</td>
<td>Abler</td>
<td>Seeking employment</td>
</tr>
<tr>
<td>Mark Hooper</td>
<td>Hasler</td>
<td>Unknown</td>
</tr>
<tr>
<td>Xianghui Huang</td>
<td>Habelter</td>
<td>Research engineer, General Electric Global R&amp;D Center, Schenectady, N.Y.</td>
</tr>
<tr>
<td>Jongmyon Kim</td>
<td>S. Wills</td>
<td>Engineer, Samsung, Seoul, South Korea</td>
</tr>
<tr>
<td>Taehyun Kim</td>
<td>Ammar</td>
<td>Senior engineer, Freescale Semiconductor, Austin, Tex.</td>
</tr>
<tr>
<td>Venkatesh Krishnan</td>
<td>Anderson</td>
<td>Senior engineer, QUALCOMM, Inc., San Diego, Calif.</td>
</tr>
<tr>
<td>Matthew Lee</td>
<td>M. Smith</td>
<td>Postdoctoral fellow, School of ECE, Georgia Institute of Technology, Atlanta, Ga.</td>
</tr>
<tr>
<td>Qingqing Liang</td>
<td>Cressler</td>
<td>Device engineer, IBM, Hopewell Junction, N.Y.</td>
</tr>
<tr>
<td>Moonkyun Maeng</td>
<td>Laskar</td>
<td>Senior signal integrity engineer, Intel Corporation, Fremont, Calif.</td>
</tr>
<tr>
<td>Priscilla Mohammed</td>
<td>Steffes</td>
<td>Research associate, NASA, Goddard Space Flight Center, Greenbelt, Md.</td>
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<tr>
<td>Carole Montarou</td>
<td>Gaylord</td>
<td>Technical staff, Intel Corporation, Hillsboro, Ore.</td>
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<tr>
<td>Steven Nugent</td>
<td>Meindl</td>
<td>Seeking employment</td>
</tr>
<tr>
<td>Kaveh Shakeri</td>
<td>Meindl</td>
<td>Technology device engineer, Cypress Semiconductor, San Jose, Calif.</td>
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<tr>
<td>Nuttapong Srirattana</td>
<td>P. Allen</td>
<td>Senior design engineer, RF Micro Devices, Greensboro, N.C.</td>
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<tr>
<td>Yudong Tan</td>
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<td>Yingchuan Zhang</td>
<td>Heck</td>
<td>Seeking employment</td>
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</tbody>
</table>
STUDENT ORGANIZATIONS

The lifeblood of ECE is its students. The student branch of the Institute of Electrical and Electronics Engineers, Eta Kappa Nu, the ECE Student Advisory Council, the ECE Student-Faculty Committee, and the newly formed Women of Electrical and Computer Engineering not only provide students with opportunities for personal and professional development, but these groups also give valuable input to the School’s faculty and administrators regarding student issues and concerns.

IEEE Student Branch

Maintaining its stature as the world’s largest student branch, the Georgia Tech IEEE group hosts seminar speakers from various companies and organizations on a weekly basis. They also sponsor a Student-Professional Awareness Conference each spring, and they participate in numerous competitions and conferences on the national and international levels.

2004-05 IEEE Student Branch Officers and Chairs

Sriram Narasimhan, Chair
Joe Yeager, Vice Chair, External Relations
Cody Planteen, Vice Chair, Internal Relations
Sourjo Basu, Treasurer
Parul Gupta, Secretary
Ryan Westafer, Hardware Chair
Sulabh Patel, Software Chair
Stephanie McLeod, Kevin Kung, Social Chairs

IEEE officers from 2004-05 celebrate the end of the academic year with incoming officers for 2005-06.

Eta Kappa Nu

HKN is the international honor society for electrical engineers; outstanding juniors, seniors, and graduate students are eligible for election to this program. They participate in community service projects throughout the year and host the weekly Bridge to Business meetings. HKN also sponsors the annual ECE Spring Picnic and several awards throughout the year, including the Richard M. Bass Eta Kappa Nu Outstanding Teacher Awards, which were presented to Gregory D. Durgin and Arthur Koblasz in spring 2005.

2004-05 Eta Kappa Nu Officers

Amit Agarwal, President
Angelique Yeung, Vice President
David Lindbergh, Treasurer
Abhinav Saxena, Corresponding Secretary
Yohan Yoon, Recording Secretary
Thomas Hanley, Lab Supplies Coordinator

G. Wallace Tennille, Bridge Correspondent
Patrick Phelan, Graduate Liaison
Ryan Westafer, Webmaster
Justin Vogt, Banquet Chair
Charles Wang, Service Project Coordinator
Thomas K. Gaylord, Faculty Advisor

Student Advisory Council/Student-Faculty Committee

The ECE Student Advisory Council meets with ECE administrators and the School’s Advisory Board on a regular basis, and the Student-Faculty Committee works on various projects throughout the year to promote more interactions and better relations among students and faculty.

The ECE Fair made its debut in April 2005, providing students a chance to learn more about ECE research and the profession as a whole. The day included the launch of ecesis, an online webzine showcasing the artistic talents of ECE’s students, faculty, and staff.

2004-05 Officers

ECE Student Advisory Council
Christopher Alvino
Woosuk Choi
Irene Dershin Chow
Eric Clopper
Siddharth (Sid) Easwar
Adam Eisenman
Gavin Ho
James Holland
Neil Joshi
Jennifer Lee
Eric Liu

ECE Student-Faculty Committee
James Holland, Student Chair
Eric Liu, Student Vice Chair
Neil Joshi, Student Treasurer
Danny Nguyen, Student Secretary
Peter Sahlstrom, Information Officer
Jeffrey A. Davis, Faculty Chair

Miguel Lopez
Danny Nguyen
Elizabeth A. Whitaker
Christopher Wieczorek
Matt Wiggins

IEEE officers from 2004-05 celebrate the end of the academic year with incoming officers for 2005-06.
NEW STUDENT ORGANIZATION FOR WOMEN FORMED

Women of Electrical and Computer Engineering

Founded in fall 2004, the mission of WECE is to address the persistently low enrollment of women in the School by working to increase awareness of the opportunities for women in electrical and computer engineering and to challenge women to achieve their full potential as engineers and as leaders. The group has undertaken an energetic program of outreach to female students in ECE and to prospective female students throughout the last academic year. WECE’s two major social events, a Halloween-Tech trivia party and a bowling party, attracted a wide cross-section of faculty, staff, and undergraduate and graduate students.

2004-05 Women of Electrical and Computer Engineering Officers

Anita Chow, President
Sara Hancock, Vice President
Paige Carpentier, Secretary
Ashley Coe, Treasurer
Bonnie Heck and Douglas B. Williams, Faculty Advisors

Competition

2005 Windows Embedded Student Challenge

Four ECE 4006 Senior Design Project students were among a field of 30 international teams competing in the Windows Embedded Student Challenge at Microsoft’s world headquarters in Redmond, Wash. The ECE team—known as the “GT Ambulance Chasers”—was comprised of spring 2005 ECE graduates Brandon Harrington, Kevin Wright, Dan Boland, Brian Liu, and their faculty mentor, Professor James O. Hamblen. The ECE 4006 team designed a Secure Traffic-Light Emergency Management System, a wireless encrypted intelligent traffic light control system for use by emergency vehicles.

2005 FIRST LEGO League Challenge

The Galactic Designers, an eight-member team from The Galloway School and Warren T. Jackson Elementary School of Atlanta and Sope Creek Elementary School and Dickerson Middle School in Marietta, Ga., claimed first prize for the second year in a row. Coached by David Turner, the Galactic Designers are (back row, L-R) Rand Elsbree, age 12; Danny Kreus, age 10; Drew Eikhoff, age 12; and Sean Eikhoff, age 10 and (front row, L-R) Hailey Brown, age 11; Jake Turner, age 10; Sutton Birch, age 10; and Austin Mattheissen, age 12. The competition is supported by grants from the National Science Foundation, Kimberly Clark, and the Netherlands American Trust.

Outreach

ECE faculty, staff, and students took part in a number of ECE-sponsored and Georgia Tech-sponsored programs focused on K-12 outreach to promote awareness of engineering and science education, as well as to inform these students about career opportunities in these fields.

In addition, WECE conducted its own, targeted outreach to elementary, middle, and high school students throughout metropolitan Atlanta by visiting students on-site and hosting female student groups at Georgia Tech for campus and lab tours. To gain even further momentum in these outreach efforts, ECE alumni and industrial sponsors have been invited to become involved in this particular outreach initiative.

At the IEEE SoutheastCon, held in Fort Lauderdale, Fla. during spring 2005, the Tech IEEE student branch hardware team entered a robot into the IEEE Hardware Competition. Each round, the Tech IEEE Branch robot raced against an opponent with the objective of locating and collecting randomly positioned steel balls, taking the least time possible. The Tech robot won Best Mechanical Design for its precision movement and sturdy construction, and it also took Most Entertaining honors for playing the Tech fight song or exclaiming “Go Yellow Jackets!” at opportune moments.
One hundred sixteen faculty members were employed in ECE during 2004-05, with 70 percent holding tenure and all holding doctorates. The average age of the faculty was 47.

**Ali Adibi, David Anderson Named as PECASE Honorees**

Ali Adibi and David V. Anderson were presented with the 2004 Presidential Early Career Awards for Scientists and Engineers, the nation’s highest honor for promising young researchers within their areas of research, on June 13, 2005. Fifty-eight researchers from the U.S. were honored in a White House ceremony presided over by John H. Marburger, III, science advisor to President George W. Bush and director of the White House Office of Science and Technology Policy.

Nominated by the U.S. Department of Defense, Dr. Adibi was honored for his research contributions to optical storage by exploring two-center holographic recordings and his contributions to chip-scale all-optical information processing modules by exploring wavelength crystals and nanophotonic approaches. Dr. Adibi was also commended for outstanding teaching with his PECASE award.

Dr. Anderson was nominated by NSF for pioneering the design of embedded signal processing and control systems that perform significant processing in both analog and digital circuits. This research in cooperative analog-digital processing is enabling potential advances in low-power embedded systems and smart sensors, such as assistive devices for the hearing-impaired.

Eight federal departments and agencies annually nominate scientists and engineers at the start of their careers whose work shows exceptional promise for leadership at the frontiers of scientific knowledge during the 21st century. Participating agencies award these beginning scientists and engineers up to five years of funding to further their research in support of critical government missions. This is the first time that two PECASE awards have been given to faculty in the same academic unit in the same year.

Ali Adibi is working with an automated setup for the detailed characterization of spatial and spectral properties of photonic crystals with very small feature sizes. Such miniaturized structures are very promising for integrated photonic circuits for applications such as optical communications and sensing.

David V. Anderson holds a prototype board for acoustic array processing. Computer monitors show development tools with code for configuring the array processing hardware.
ECE Regents Professor Gives Summer Commencement Address

As the recipient of the Class of 1934 Distinguished Professor Award, Thomas K. Gaylord delivered the address to the graduates at Georgia Tech’s 222nd commencement. Dr. Gaylord is pictured holding the Georgia Tech mace as he leads the faculty processional.

NEW FACULTY

Deepak Divan, a professor in the electric power group, has established and now serves as the director of the Intelligent Power Infrastructure Consortium, which pursues multidisciplinary research into advanced concepts in power. The possibility of implementing a smarter power grid using 'power sensornets' is of particular interest; this technique would use embedded, low-cost, massively-dispersed sensors, actuators, and converters that are networked together to improve the reliability and utilization of the nation's power infrastructure. Before coming to Georgia Tech, he served as chair of the board and chief technology officer for Soft Switching Technologies, a spinoff company from the University of Wisconsin at Madison.

Elliot Moore is an ECE assistant professor at Georgia Tech Savannah, where he is involved in digital signal processing. Dr. Moore was a postdoctoral fellow and Ph.D. student in ECE’s Center for Signal and Image Processing. His Ph.D. research involved the analysis of objectively measurable speech features and their relation to vocal affect and depression in a human voice. While a graduate student, Dr. Moore was a NSF Fellow, President’s Fellow, and a Fellow in the Facilitating Academic Careers in Engineering Program.

Shyh-Chiang Shen is an assistant professor in microsystems. Before joining Tech in January 2005, Dr. Shen spent four months as a postdoctoral research associate at the University of Illinois, where he worked on GaN HBT and LET projects. Prior to his postdoctoral position, he was a senior processing engineer at Xndium Technologies in Champaign, Ill.

F. Levent Degertekin accepted a joint faculty appointment as an assistant professor in ECE; his primary appointment is with Tech’s George W. Woodruff School of Mechanical Engineering. His main areas of interest are in microelectromechanical systems, acoustic and opto-acoustic devices, medical ultrasound imaging, and atomic force microscopy. Dr. Degertekin is a 2004 recipient of the NSF CAREER Award and presently serves as associate editor of the *IEEE Sensors Journal*.

Professorships in FY 05

James H. McClellan, John and Marilu McCarty Chair of Electrical Engineering
John D. Cressler, Byers Professor
Steven W. McLaughlin, Byers Professor
Russell M. Mersereau, Joseph M. Pettit Professor
Sudhakar Yalamanchili, Joseph M. Pettit Professor
Aaron D. Lanterman, Demetrius T. Paris Professor

Promotions and Tenure in FY 05

Promotions
Ali Adibi, to Associate Professor
Abhijit Chatterjee, to Professor
Steven W. McLaughlin, to Professor
Henry L. Owen, to Professor

Promotion to Associate Professor with Tenure
Yucel Altunbasak
Robert J. Butera, Jr.
Vincent J. Mooney, III
Emmanouil M. Tentzeris
Anthony J. Yezzi, Jr.

Tenure
David S. Citrin
John D. Cressler
Ian T. Ferguson
Chin-Hui Lee
REGENTS’ PROFESSORS

Thomas K. Gaylord
Julius Brown Chair Professor
Ph.D., Rice University
Optics and photonics
OSA Fellow, 2005 OSA Esther Hoffmann Beller Medal for his innovative teaching in optical science and engineering and his significant contributions in establishing Tech’s optics and photonics program and the Class of 1934 Distinguished Professor Award which recognizes sustained outstanding achievement in teaching, research, and service and is the highest honor given to a faculty member at Georgia Tech.

Russell M. Mersereau
Joseph M. Pettit Professor
Sc.D., Massachusetts Institute of Technology
Digital signal processing

Ajeet Rohatgi
Georgia Power Distinguished Professor, Director of the University Center of Excellence for Photovoltaics Research and Education
Ph.D., Lehigh University
Electric power; microsystems

Glenn S. Smith
John Pippin Chair in Electromagnetics
Ph.D., Harvard University
Electromagnetics; electronic design and applications

PROFESSORS

Ian F. Akyildiz
Byers Professor in Telecommunications
Ph.D., University of Erlangen
Telecommunications

Mark G. Allen
Joseph M. Pettit Professor in Microelectronics; Co-Director, Center for MEMS and Microsystems Technologies
Ph.D., Massachusetts Institute of Technology
Microsystems
Georgia Tech Outstanding Faculty Leadership for the Development of Graduate Research Assistants Award for providing high quality leadership in direct research advising.

Phillip E. Allen (Retired June 1, 2005)
Schlumberger Chair Professor in Microelectronics
Ph.D., University of Kansas
Electronic design and applications
Dr. Allen joined ECE in 1984 as the Schlumberger Chair Professor in Microelectronics, and in 1989, he co-founded the Georgia Tech Analog Consortium.

Thomas P. Barnwell, III
Director, Arbutus Center for Distributed Engineering Education; Arbutus Chair in Distributed Engineering Education; Georgia Research Alliance Eminent Scholar
Ph.D., Massachusetts Institute of Technology
Digital signal processing

Douglas M. Blough
Co-Director, Center for Experimental Research in Computer Systems
Ph.D., The Johns Hopkins University
Computer engineering

John A. Buck
Ph.D., University of California at Berkeley
Optics and photonics
W. Russell Callen, Jr. (Retired June 1, 2005)
Ph.D., Stanford University
Optics and photonics
A faculty member since 1970, Dr. Callen has been one of ECE’s most versatile instructors. For the last 15 years, he has been the administrator and principal instructor for Fundamentals of Engineering and Principles and Practice of Engineering, courses offered through Tech’s Professional Education Office.

Gee-Kung Chang
Byers Endowed Professor in Optical Networking; GRA Eminent Scholar
Ph.D., University of California at Riverside
Optics and photonics; telecommunications
IEEE Fellow “for contributions to optical networking and label switching technologies” and an OSA Fellow.

Abhijit Chatterjee
Ph.D., University of Illinois at Urbana-Champaign
Computer engineering

Mark A. Clements
Director, Interactive Media Technology Center
Sc.D., Massachusetts Institute of Technology
Bioengineering; digital signal processing
IEEE Fellow “for contributions to speech signal processing and robust speech recognition.”

John A. Copeland
John H. Whitmayer, Jr. Technology Transfer Chair; GRA Eminent Scholar; Director, Communications Systems Center
Ph.D., Georgia Institute of Technology
Telecommunications

John D. Cressler
Byers Professor
Ph.D., Columbia University
Microsystems
Stephan P. DeWeerth
Ph.D., California Institute of Technology
Bioengineering

Deepak Divan
Director, Intelligent Power Infrastructure Consortium
Ph.D., University of Calgary
Electric power

John F. Dorsey
Ph.D., Michigan State University
Systems and controls

Russell D. Dupuis
Steve W. Chaddick Endowed Chair in Electro-Optics; GRA Eminent Scholar; Director, Center for Compound Semiconductors
Ph.D., University of Illinois at Urbana-Champaign
Microsystems

Robert K. Feeney (Retired December 2004)
Ph.D., Georgia Institute of Technology
Electromagnetics; electronic design and applications; microsystems
In 1970, Dr. Feeney began his career with the ECE faculty and together with David R. Hertling, professor and ECE associate chair emeritus, they founded one of the first RF electronics educational programs.

Ian T. Ferguson
Ph.D., University of St. Andrews in Scotland
Microsystems; optics and photonics

Elias N. Glytsis
Ph.D., Georgia Institute of Technology
Optics and photonics

Thomas G. Habetler
Ph.D., University of Wisconsin at Madison

James O. Hamblen
Ph.D., Georgia Institute of Technology
Computer engineering

Ronald G. Harley
Duke Power Company Distinguished Professor
Ph.D., London University

IEEE Power Engineering Society Cyril Veinott Award “for his contributions to the analysis and design of electric machines and drive systems.”

Monson H. Hayes, III
Sc.D., Massachusetts Institute of Technology
Digital signal processing

Bonnie S. Heck
Ph.D., Georgia Institute of Technology
Computer engineering; systems and controls

Women in Engineering Excellence Faculty Mentoring Award for guidance of current and prospective students in and outside the classroom.

Joseph L.A. Hughes
Associate Chair for ECE Academic Operations
Ph.D., Stanford University
Computer engineering; microsystems; telecommunications
ECE Distinguished Educator Award from the ECE Division of the American Society for Engineering Education “for advancing ECE education through development and guidance of computer engineering undergraduate programs, leadership in electrical and computer engineering education, and extraordinary service to accreditation process.”
William D. Hunt
Ph.D., University of Illinois at Urbana-Champaign
Bioengineering; microsystems

Ramesh C. Jain
Rhea "Ray" S. Farmer, Jr. Distinguished Chair in Embedded Experiential Systems; GRA Eminent Scholar
Ph.D., Indian Institute of Technology at Kharagpur
Computer engineering; digital signal processing

Nikil S. Jayant
Executive Director, Georgia Centers for Advanced Telecommunications Technology; Director, Georgia Tech Broadband Institute; John Pippin Chair in Wireless Systems; GRA Eminent Scholar
Ph.D., Indian Institute of Science, Bangalore
Computer engineering; telecommunications

Biing-Hwang (Fred) Juang
Motorola Foundation Chair Professor; GRA Eminent Scholar
Ph.D., University of California at Santa Barbara
Digital signal processing; telecommunications

Bernard Kippelen
Associate Director, Center for Organic Photonics and Electronics
Ph.D., Université Louis Pasteur
Microsystems; optics and photonics

Joy Laskar
Director, Georgia Electronic Design Center; Joseph M. Pettit Professor in Electronics
Ph.D., University of Illinois at Urbana-Champaign
Electromagnetics; electronic design and applications; microsystems
IEEE Fellow “for contributions to the modeling and development of high frequency communication modules.”

W. Marshall Leach, Jr.
Ph.D., Georgia Institute of Technology
Electromagnetics; electronic design and applications; microsystems
IEEE Fellow “for contributions to electroacoustics and near-field antenna measurements.”

Chin-Hui Lee
Ph.D., University of Washington
Digital signal processing

James H. McClellan
Byers Professor in Digital Signal Processing
Ph.D., Rice University
Computer engineering; digital signal processing

Vijay K. Madisetti
Ph.D., University of California at Berkeley
Computer engineering; digital signal processing

Gary S. May
Steve W. Chaddick School Chair (effective May 2005); Executive Assistant to President G. Wayne Clough and Motorola Foundation Professor (titles held previous to May 2005)
Ph.D., University of California at Berkeley
Microsystems; systems and controls

James D. Meindl
Joseph M. Pettit Chair in Microelectronics; Director, Microelectronics Research Center
Ph.D., Carnegie-Mellon University
Microsystems
2004 Aristotle Award from the Semiconductor Research Corporation. The award “acknowledges outstanding teaching in its broadest sense, emphasizing student advising and teaching during the research project.”

A.P. Sakis Meliopoulos
Ph.D., Georgia Institute of Technology
Electric power; systems and controls

Steven W. McLaughlin
Byers Professor and Research Director, Georgia Tech Lorraine
Ph.D., University of Michigan at Ann Arbor
Telecommunications

Henry L. Owen
Ph.D., Georgia Institute of Technology
Computer engineering; telecommunications

Krishna V. Palem
Director, Center for Research on Embedded Systems and Technology
Ph.D., University of Texas at Austin
Computer engineering

John B. Peatman
Ph.D., Case Western Reserve University
Computer engineering
2006 IEEE Undergraduate Teaching Award “for a distinguished career of inspirational teaching and mentoring of undergraduate students in digital systems design.”

Andrew F. Peterson
Associate Chair for ECE Faculty Development
Ph.D., University of Illinois at Urbana-Champaign
Electromagnetics

Hans B. Pütgen
Associate Chair for ECE External Affairs; President, Georgia Tech Lorraine; Director, National Electric Energy Testing, Research, and Applications Center; Georgia Power Distinguished Chair Professor
Ph.D., University of Florida
Electric power

William T. Rhodes
Ph.D., Stanford University
Optics and photonics

Jay H. Schlag (Retired November 2004)
Associate Chair for ECE Operations
Ph.D., Georgia Institute of Technology
Computer engineering

Dr. Schlag joined the School’s faculty in 1967. He has been the primary contact for the facilities design of the Technology Square Research Building, the Klaus Advanced Computing Building, the Bunger-Henry Building renovation, and the forthcoming Nanotechnology Research Center Building; he remains as an associate chair on a half-time basis.

Waymond R. Scott, Jr.
Ph.D., Georgia Institute of Technology
Electromagnetics

Paul G. Steffes
Associate Chair for ECE Graduate Affairs
Ph.D., Stanford University
Electromagnetics; telecommunications

Gordon L. Stüber
Joseph M. Pettit Professor in Communications
Ph.D., University of Waterloo
Computer engineering; telecommunications

Madhavan Swaminathan
Deputy Director, Packaging Research Center
Ph.D., Syracuse University
Computer engineering; electromagnetics

Allen Tannenbaum
Julian Hightower Professor
Ph.D., Harvard University
Bioengineering; systems and controls

David G. Taylor
Director, Center for Board Assembly Research; Associate Director, Manufacturing Research Center
Ph.D., University of Illinois at Urbana-Champaign
Systems and controls

Rao R. Tummala
Director, Packaging Research Center; Joseph M. Pettit Chair in Electronics Packaging; GRA Eminent Scholar
Ph.D., University of Illinois at Urbana-Champaign
Computer engineering; microsystems

George J. Vachtsevanos
Ph.D., The City University of New York
Bioengineering; systems and controls

Erik I. Verriest
Ph.D., Stanford University
Optics and photonics; systems and controls

Yorai Y. Wardi
Ph.D., University of California at Berkeley
Computer engineering; systems and controls; telecommunications

Roger P. Webb (Retired December 2004)
Steve W. Chaddick School Chair
Ph.D., Georgia Institute of Technology
Electric power
ECE Distinguished Alumnus Award at the University of Utah and the ECEDHA Outstanding Leadership and Service Award

D. Scott Wills
Sc.D., Massachusetts Institute of Technology
Computer engineering

Sudhakar Yalamanchili
Co-Director, Center for Experimental Research in Computer Systems; Associate Director, Center for Research in Embedded Systems and Technology; Joseph M. Pettit Professor
Ph.D., University of Texas at Austin
Computer engineering
ASSOCIATE PROFESSORS

Ali Adibi
Ph.D., California Institute of Technology
Optics and photonics
2005 PECASE Award - see story on page 16

Yucel Altunbasak
Ph.D., University of Rochester
Digital signal processing

John R. Barry
Ph.D., University of California at Berkeley
Telecommunications

Miroslav M. Begovic
Ph.D., Virginia Polytechnic Institute and State University
Electric power

Oliver Brand
Co-Director, Center for MEMS and Microsystems Technologies
Ph.D., ETH-Zurich
Microsystems

Robert J. Butera, Jr.
Ph.D., Rice University
Bioengineering; computer engineering

David S. Citrin
Ph.D., University of Illinois at Urbana-Champaign
Optics and photonics

K.-H. Michael Fan
Ph.D., University of Maryland
Systems and controls

A. Bruno Frazier
Co-Director, Center for MEMS and Microsystems Technologies
Ph.D., Georgia Institute of Technology
Bioengineering; Microsystems

Paul E. Hasler
Director, Georgia Tech Analog Consortium
Ph.D., California Institute of Technology
Computer engineering; electronic design and applications

Christiana B. Honsberg
Ph.D., University of Delaware
Electric power; Microsystems

Mary Ann Ingram
Ph.D., Georgia Institute of Technology
Telecommunications

Chuanyi Ji
Ph.D., California Institute of Technology
Telecommunications

David C. Keezer
Ph.D., Carnegie-Mellon University
Computer engineering; Microsystems

J. Stevenson Kenney
ON Semiconductor Junior Professor
Ph.D., Georgia Institute of Technology
Electronic design and applications; telecommunications
2005 IEEE Microwave Theory and Techniques Society Microwave Application Award “for power amplifier linearization for use in cellular/wireless systems.”

Arthur Koblasz
Ph.D., California Institute of Technology
Bioengineering

Ye (Geoffrey) Li
Ph.D., Auburn University
Telecommunications

Jennifer E. Michaels
Ph.D., Cornell University
Systems and controls
Women in Engineering Excellence Faculty Mentoring Award for guidance of current and prospective students in and outside the classroom.

Thomas E. Michaels
Ph.D., Washington State University
Systems and controls

Linda S. Milor
Ph.D., University of California at Berkeley
Electronic design and applications

Vincent J. Mooney, III
Ph.D., Stanford University
Computer engineering

Stephen E. Ralph
Ph.D., Cornell University
Electromagnetics; Microsystems; Optics and photonics

David E. Schimmel
Ph.D., Cornell University
Computer engineering

Emmanouil M. Tentzeris
Ph.D., University of Michigan at Ann Arbor
Electromagnetics

Douglas B. Williams
Associate Chair for ECE Undergraduate Affairs
Ph.D., Rice University
Digital signal processing
Women in Engineering Excellence Faculty Mentoring Award for guidance of current and prospective students in and outside the classroom.

Linda M. Wills
Ph.D., Massachusetts Institute of Technology
Computer engineering

Anthony J. Yezzi, Jr.
Ph.D., University of Minnesota
Bioengineering; computer engineering; systems and controls

G. Tong Zhou
Ph.D., University of Virginia
Bioengineering; digital signal processing

ASSISTANT PROFESSORS

David V. Anderson
Ph.D., Georgia Institute of Technology
Computer engineering; digital signal processing
2005 PECASE Award - see story on page 16

Farrokh Ayazi
Co-Director, Center for MEMS and Microsystems Technologies
Ph.D., University of Michigan at Ann Arbor
Electronic design and applications; Microsystems

Jeffrey A. Davis
Ph.D., Georgia Institute of Technology
Computer engineering
Georgia Tech Class of 1940 W. Howard Ector Outstanding Teacher Award for his extraordinary efforts in teaching, inspiration transmitted to students, direct impact and involvement with students, and intellectual integrity and scholarship.

W. Alan Doolittle
Ph.D., Georgia Institute of Technology
Microsystems
Lockheed Martin Aeronautics Company Dean’s Award for Teaching Excellence chosen by Georgia Tech’s College of Engineering Dean’s Office.

Gregory D. Durgin
Ph.D., Virginia Polytechnic Institute and State University
Electromagnetics
Women in Engineering Excellence Teaching Faculty Award - decided by a vote among women engineering students recognizing excellence in teaching, caring, and motivational attitude toward students.

Magnus Egerstedt
Ph.D., Royal Institute of Technology, Stockholm, Sweden
Computer engineering; systems and controls

Faramarz Fekri
Ph.D., Georgia Institute of Technology
Digital signal processing; telecommunications

Aaron D. Lanterman
Demetrius T. Paris Professor
Ph.D., Washington University in St. Louis
Digital signal processing

Hsien-Hsin Sean Lee
Ph.D., University of Michigan at Ann Arbor
Computer engineering

Sung Kyo Lim
Ph.D., University of California at Los Angeles
Computer engineering

Ioannis (John) Papapolymerou
Ph.D., University of Michigan
Electromagnetics; electronic design and applications

George F. Riley
Ph.D., Georgia Institute of Technology
Computer engineering

Gabriel Rincón-Mora
Ph.D., Georgia Institute of Technology
Electric power; electronic design and applications

Shyh-Chiang Shen
Ph.D., University of Illinois at Urbana-Champaign
Microsystems
Raghupathy Sivakumar
Ph.D., University of Illinois at Urbana-Champaign
Telecommunications

**GEORGIA TECH SAVANNAH**

Randal T. Abler, Assistant Professor
Ph.D., Georgia Institute of Technology
Computer engineering
Georgia Tech Class of 1934 Outstanding Innovative Use of Education Technology Award

Ghassan Al-Regib, Assistant Professor
Ph.D., Georgia Institute of Technology
Digital signal processing; telecommunications

Christopher F. Barnes, Associate Professor
Ph.D., Brigham Young University
Computer engineering; optics and photonics

Rahman Zaghloul, Professor
Ph.D., University of Illinois at Urbana-Champaign
Optics and photonics

Elliot Moore, III, Assistant Professor
Ph.D., Georgia Institute of Technology
Digital signal processing; telecommunications

Joel R. Jackson, Assistant Professor
Ph.D., Georgia Institute of Technology
Digital signal processing

Benjamin D.B. Klein, Assistant Professor
Ph.D., University of Illinois at Urbana-Champaign
Optics and photonics

P. Douglas Yoder, Associate Professor
Ph.D., University of Nebraska at Lincoln
Computer engineering; optics and photonics

Rahman Zaghloul, Professor
Ph.D., University of Nebraska at Lincoln
Computer engineering; optics and photonics

**PROFESSORS EMERITI AND LENGTH OF SERVICE**

Cecil O. Alford 1968-98

Phillip E. Allen 1984-2005

Henry C. Bourne 1982-92

Aubrey Bush 1965-92
  (Employed with the Georgia Centers for Advanced Telecommunications Technology)

W. Russell Callen, Jr. 1970-2005
  (Part-time employment with ECE)

J. Alvin Connelly 1968-2001
  (Part-time employment with ECE)

Robert K. Feeney 1970-2004
  (Part-time employment with ECE)

Joseph L. Hammond 1955-84
  (Employed with Clemson University)

David R. Hertling 1978-2004
  (Part-time employment with ECE)

Richard J. Higgins 1987-99

John W. Hooper 1957-88

Edward B. Joy 1970-98


Richard P. Kenan 1986-99

Mohamed F. Moad 1963-2001
  (Part-time employment with ECE)

Dale C. Ray 1966-99

George P. Rodrigue 1968-96

William E. Sayle 1970-2003
  (Part-time employment with ECE and GTL)

Ronald W. Schafer 1974-2004
  (Employed with Hewlett-Packard)

Jay H. Schlag 1967-2004
  (Part-time employment with ECE)

Kendall L. Su 1954-94

Roger P. Webb 1963-2004
  (Part-time employment with the Georgia Tech Office of the Provost and Vice President for Academic Affairs)

**JOINT FACULTY APPOINTMENTS**

Gisele Bennet, Senior Research Engineer,
Georgia Tech Research Institute

James Foley, Professor and Stephen Fleming
Chair in Telecommunications, College of Computing

Levent Degertekin, Assistant Professor,
George W. Woodruff School of Mechanical Engineering

Yogendra Joshi, Professor,
George W. Woodruff School of Mechanical Engineering

**ADJUNCT AND PART-TIME APPOINTMENTS**

Emmanuel Anemogiannis, Nortel Networks

Daniel J. Blumenthal, University of California
  at Santa Barbara

David E. Bockelman, Free Electron Technology

Bertrand Boussert, Georgia Tech Lorraine

Catherine Brechignac, Centre National De La Recherche Scientifique

Martin A. Brooke, Duke University

Marijn Brummer, Emory University

Brian Butka, Integrated Device Technology

Donald D. Davis, Antec Corporation

Richard DeMillo, Dean, College of Computing

Jim D. Echard, Georgia Tech Research Institute

Robert Eisner, Crawford Long Hospital of Emory University

Irfan Essa, College of Computing

Gary G. Gimmestad, Georgia Tech Research Institute

Jean-Pierre Goedgebuer, Centre National De La Recherche Scientifique

Mathieu Hans, Hewlett-Packard Company

Nile F. Hartman, Georgia Tech Research Institute
  (Retired)

E. Jefferson Holder, Georgia Tech Research Institute

Michele L. Jamrozik, Georgia Tech Lorraine

Nan Marie Jokerst, Duke University

Lance Kaplan, Clark Atlanta University

Fred Kitson, Hewlett-Packard

Laurent Larger, Georgia Tech Lorraine

Bob Lee, Wallace H. Coulter Department of Biomedical Engineering at Georgia Tech/Emory University

Y.-L. Li, Intel Corporation

John O. Limb, Broadcom

Robert L. Lingle, Georgia Tech

Kenneth M. Mackenzie, College of Computing

Peter Manolios, College of Computing


Bill McKinney, Georgia Tech Research Institute

Robert McNally, NuTek BioMedical

Jerome Meisel, Georgia Tech

William L. Melvin, Georgia Tech Research Institute

Stephen C. Mettler, Lucent Technologies

Joseph W. Monaco, Line Imaging Systems

Romain Murenzi, Clark Atlanta University

William R. Owens, Georgia Tech Research Institute

Umakishore Ramachandran, College of Computing

Mark A. Richards, Georgia Tech Research Institute

Craig Richardson, ASPI Digital

Tariq Samad, Honeywell

Karsten Schwan, College of Computing

Robert E. Schwerzel, Georgia Tech Research Institute

Oskar Skrinjar, Wallace H. Coulter Department of Biomedical Engineering at Georgia Tech/Emory University

Christopher Summers, School of Materials Science and Engineering

John D. Terry, Nokia

Kwan K. Truong, Polycom, Inc.

May Wang, Wallace H. Coulter Department of Biomedical Engineering at Georgia Tech/Emory University

Stephen B. Wicker, Cornell University

Zhiping (James) Zhou, Georgia Tech
Microelectronics Research Center
During 2004-05, both active and retired ECE faculty members offered and taught 27 courses through the Georgia Tech Professional Education Office. Below is a listing of course dates, titles, and ECE-based instructors and administrators; all classes were taught at Georgia Tech’s Atlanta campus, unless indicated otherwise. Five ECE-sponsored conferences and workshops are also included in this list.

### 2004

<table>
<thead>
<tr>
<th>Date</th>
<th>Course Title</th>
<th>Instructor(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 26 - 30</td>
<td>RF and Wireless Principles and Practice</td>
<td>Robert K. Feeney and David R. Hertling</td>
</tr>
<tr>
<td>Aug. 2 - 6</td>
<td>CMOS Analog Integrated Circuits</td>
<td>Phillip E. Allen; Atlanta, Ga.</td>
</tr>
<tr>
<td>Aug. 23 - 27</td>
<td>Near-Field Antenna Measurements and Microwave Holography</td>
<td>Edward B. Joy; Boulder, Colo.</td>
</tr>
<tr>
<td>Sept. 8 - 10</td>
<td>5th Topical Meeting on Silicon Monolithic Integrated Circuits in RF Systems</td>
<td>John Cressler and John Papapolymerou</td>
</tr>
<tr>
<td>Sept. 13 - 17</td>
<td>RF and Wireless Engineering</td>
<td>Robert K. Feeney and David R. Hertling</td>
</tr>
<tr>
<td>Sept. 21 - 23</td>
<td>Power Distribution System Grounding and Transients</td>
<td>A.P. Sakis Meliopoulos and George Cokkinides</td>
</tr>
<tr>
<td>Sept. 9 - Jan. 10, 2005</td>
<td>DSP for Practicing Engineers – Online Course</td>
<td>Doug Williams</td>
</tr>
<tr>
<td>Oct. 4 - 7</td>
<td>Fundamentals of Synthetic Aperture Radar Signal Processing</td>
<td>Mark Richards</td>
</tr>
<tr>
<td>Nov. 10 - 11</td>
<td>5th Georgia Tech Conference on Nanoscience and Nanotechnology</td>
<td>Z.L. Wang</td>
</tr>
<tr>
<td>Nov. 17 - 19</td>
<td>Modern Energy Management Systems</td>
<td>A.P. Sakis Meliopoulos</td>
</tr>
<tr>
<td>Nov. 16 - 19</td>
<td>Fault Diagnostics/Prognostics for Equipment Reliability and Health Maintenance</td>
<td>George Vachtsevanos</td>
</tr>
<tr>
<td>Nov. 29 - Dec. 3</td>
<td>Far-Field, Anechoic Chamber, Compact, and Near-Field Antenna Measurements</td>
<td>Edward B. Joy</td>
</tr>
<tr>
<td>Dec. 7 - 10</td>
<td>MEMS Boot Camp</td>
<td>Bruno Frazier</td>
</tr>
<tr>
<td>Dec. 13 - 15</td>
<td>Emerging MEMS Fabrication Technologies</td>
<td>Bruno Frazier</td>
</tr>
</tbody>
</table>

### 2005

<table>
<thead>
<tr>
<th>Date</th>
<th>Course Title</th>
<th>Instructor(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. 22 - March 12</td>
<td>Electrical Engineering: Preparation for the P.E. Exam</td>
<td>W. Russell Callen, Jr. and William E. Sayle</td>
</tr>
<tr>
<td>Jan. 24 - 28</td>
<td>Fundamentals of Radar Signal Processing</td>
<td>Mark Richards</td>
</tr>
<tr>
<td>Feb. 14 - July 8</td>
<td>DSP for Practicing Engineers – Online Course</td>
<td>Doug Williams</td>
</tr>
<tr>
<td>March 21 - 23</td>
<td>Ubiquitous Broadband Access Using Wi-MAX</td>
<td>Benny Bing</td>
</tr>
<tr>
<td>March 22 - 23</td>
<td>2nd International Workshop on Nano and Bio-Electronics Packaging</td>
<td>Leyla S. Conrad</td>
</tr>
<tr>
<td>March 22 - 25</td>
<td>Integrated Grounding System Design and Testing</td>
<td>A.P. Sakis Meliopoulos and George Cokkinides</td>
</tr>
<tr>
<td>March 28 - 30</td>
<td>Wireless Local Area Networks</td>
<td>Benny Bing</td>
</tr>
<tr>
<td>April 4 - Aug. 1</td>
<td>DSP for Practicing Engineers – Online Course</td>
<td>Doug Williams</td>
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<tr>
<td>April 25 - 26</td>
<td>Fault and Disturbance Analysis Conference</td>
<td>A.P. Sakis Meliopoulos</td>
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<tr>
<td>April 25 - 28</td>
<td>MEMS Boot Camp</td>
<td>Bruno Frazier</td>
</tr>
<tr>
<td>April 25 - 29</td>
<td>RF and Wireless Principles and Practice</td>
<td>Robert K. Feeney and David R. Hertling</td>
</tr>
<tr>
<td>April 25 - 29</td>
<td>Antenna Engineering</td>
<td>Edward B. Joy, Waymond R. Scott, Jr., and Glenn S. Smith</td>
</tr>
<tr>
<td>April 27 - 29</td>
<td>59th Annual Protective Relaying Conference</td>
<td>A.P. Sakis Meliopoulos</td>
</tr>
<tr>
<td>May 16 - 18</td>
<td>Grounding, Harmonics, and Electromagnetic Influence Design Practices</td>
<td>A.P. Sakis Meliopoulos and George Cokkinides</td>
</tr>
<tr>
<td>May 23 - 26</td>
<td>Fault Diagnostics/Prognostics for Equipment Reliability and Health Maintenance</td>
<td>George Vachtsevanos</td>
</tr>
</tbody>
</table>
Academic, Research, and Administrative Personnel

Two hundred thirty-two employees holding academic professional titles, research faculty/personnel titles, and administrative staff titles were employed in ECE during 2004-05. As of June 30, 2005, ECE employed 193 administrative, research, and academic professionals.

ACADEMIC PROFESSIONALS
Jill Auerbach
Academic Professional
Catherine Bass
Instructor
Christina Bourgeois
Lecturer
Leyla Sutcu Conrad
Senior Academic Professional
Michael D. Furman
Academic Professional
Warren M. Lanier
Academic Professional
Michael Laughter
Lecturer
François J. Malassenet
Directeur de Georgia Tech Lorraine/Academic Professional
Gail O. Palmer
Lecturer
Kathleen Robichaud
Senior Academic Professional
W. Whitfield Smith
Senior Academic Professional
David S. Webb
Senior Academic Professional and Assistant to the Chair for Computer Support

RESEARCH FACULTY/PERSONNEL
Robin Abotu
Research Scientist II
Bilge Akgul
Research Engineer II
Gnana Prakash
Akkanagowda Patel
Postdoctoral Fellow
Mahmoud Fuad Almassri
Postdoctoral Fellow
Jorge Altamirano
Research Technician II
Timothy Andrews
Research Engineer I
Caryn Arrowood
Research Engineer II
Ali Asghar
Research Engineer I
Ravi Doraswami
Research Engineer II
Admela Jukan
Research Engineer II
Ramzy Obaid
Postdoctoral Fellow
Amir Betser
Senior Research Engineer
Adriane Swalm Durey
Postdoctoral Fellow
Kang-Wook Kim
Postdoctoral Fellow
Ming Pan
Postdoctoral Fellow
Abdul Beyah
Research Engineer II
Abashifreke Ebong
Senior Research Engineer
Seong-Soo Kim
Postdoctoral Fellow
Hyun Min Park
Postdoctoral Fellow
Swapan K. Bhattacharya
Senior Research Scientist
Arif Ege Engin
Postdoctoral Fellow
Sungwon Kim
Postdoctoral Fellow
Jin Woo Park
Postdoctoral Fellow
Benny Bing
Research Engineer II
Barry N. Fairley
Research Coordinator I
Tong-Ho Kim
Postdoctoral Fellow
Edgar Brown
Research Engineer I
Babak Firoozbakhsh
Research Engineer I
Yeong Kim
Research Engineer II
F. Ala Boumedine
Research Engineer II
Dale E. Callaway
Research Coordinator II
Hiram Firpi
Postdoctoral Fellow
Frank C. Lambert
Senior Research Engineer
Guillaume Chabannes
Research Engineer II
Canek Fuentes-Herandez
Senior Research Engineer
Baik-Woo Lee
Postdoctoral Fellow
Death-Ann D. Chinsino
Research Engineer II
Edward Gebara
Research Engineer II
Chang Ho Lee
Research Engineer II
Stephane Pinel
Research Engineer II
Volkan Cevher
Postdoctoral Fellow
Sergei Goupalov
Postdoctoral Fellow
Mark A. Richards
Principal Research Engineer
Sudipto Chakraborty
Research Engineer II
Mason Graff
Research Scientist I
Brian Rounsaville
Research Scientist I
Thomas C. Champion
Research Engineer I
Daniel Guidotti
Senior Research Scientist
Jae-Hyun Ryu
Research Engineer II
Yi-Jan Chen
Research Engineer II
Jeongseok Ha
Postdoctoral Fellow
Caterina Scoglio
Research Engineer II
Uttiya Chowdhury
Postdoctoral Fellow
Joshua Haddox
Research Scientist I
Susanta Sengupta
Research Engineer I
Theodore Chung
Postdoctoral Fellow
Ki Ho Han
Postdoctoral Fellow
Rahul Singh
Research Scientist II
Larry T. Coffeen
Research Engineer II
Zhili Hao
Postdoctoral Fellow
Samuel F. Smith
Research Scientist I
George Cokkinides
Visiting Professor
Richard A. Hartlein
Senior Research Engineer
June O. Song
Postdoctoral Fellow
Didier Contis
Research Engineer II
Lonnie D. Harvel
Senior Research Engineer
Paul L. Springer
Senior Research Engineer
Richard Copeland
Research Engineer II
David W. Harwell
Research Engineer I
Daniela Staiacaescu
Research Engineer II
Christophe Courcimault
Research Engineer I
Walter Henderson
Research Scientist I
Fred T. Stanley
Research Coordinator I
Florent Cros
Research Engineer I
Eliezer Hershkovits
Postdoctoral Fellow
Harry T. Sullivan
Research Scientist I
Lorand Csizsar
Research Technologist
Raymond C. Hill
Research Technologist
Venkatesh Sundaram
Research Engineer II
Sidharth Dalmia
Research Engineer II
Jiandong Huang
Postdoctoral Fellow
Dean A. Sutter
Electrical Engineer III
Benoit Domerq
Research Scientist II
Jimmie Jones
Research Technician III
Liang Tang
Postdoctoral Fellow

Two hundred thirty-two employees holding academic professional titles, research faculty/personnel titles, and administrative staff titles were employed in ECE during 2004-05. As of June 30, 2005, ECE employed 193 administrative, research, and academic professionals.
Elaine Hicks (L) and Nancy Sandlin, who earned professional development certificates, are pictured with Roger Webb at the 2005 ECE Awards Program.

ADMINISTRATIVE STAFF

Nancy Baines
Administrative Assistant II

Yvonne Bridges
Administrative Assistant II

Debra Ballkom
Accountant II

Harry Beck
Director of Operations

Brian Bennett
Mechanical Technician I

DeeDee Bennett
Administrative Assistant I

Margaret Boehme
Administrative Assistant II

Robert C. Boozer
Business Operations Manager

Louis Boulanger
Mechanical Technician III

Thomas E. Brewer
Assistant to the Chair and Laboratory Manager II

Rebecca "Suzy" Briggs
Director of ECE Development-Alumni

Lynda D. Buescher
Assistant Director for ECE Personnel Services

Kathy B. Cheek
Program Coordinator II

Christopher Connelly
Computer Services Specialist II

Sherrie Cooper
Academic Assistant I

Reed Crouch
Program Coordinator II

Sharon Crouch
Assistant Director for ECE Accounting

Tina Crouch
Accountant III

Marion Crowder
Senior Information Specialist

Bethany Davis
Program Coordinator II

Erica Edwards
Accountant III

Angela Elley
Academic Advisor I

Christy K. Ellis
Administrative Assistant II

Christopher Evans
Project Director II

Cordai Farrar
Administrative Assistant II

Sharon Pugh Fennell
Administrative Assistant II

Candy S. Floyd
Administrative Assistant I

Claudia Ford
Academic Advisor II

Diana L. Fouts
Graphics Specialist

Kay Gilstrap
Administrative Manager I

Gail A. Gourley
Project Coordinator II

LaJauna F. Guillory
Program Manager

Samuel Gunderman
Computer Services Specialist III

Pamela F. Halverson
Administrative Coordinator

Lauren Hall
Program Manager

Sandra Hayes
Program Manager

Elaine Hicks
Administrative Assistant I

Fanchette Hillery
Computer Services Specialist III

Robert R. House
Electronics Specialist

Zhaorun Huang
Postdoctoral Fellow

Leslie Hudson
Accountant II

Angela Hughes
Administrative Manager I

Peter Hyunh
Computer Services Specialist II

Edgar L. Jones
Facility and Laboratory Coordinator

Rajib Joshi-Acharya
Computer Services Specialist III

Debra B. Kelley
Program Manager

Deborah K. King
Administrative Assistant II

Sharon D. Lawrence
Academic Assistant II

Angelo Lawton
Research Coordinator I

Herbert Lensch
Computer Services Specialist II

Amber Lesher
Administrative Assistant II

Judith C. Lorier
Accounting Manager I

Ephraim Macharia
Administrative Assistant I

Keith May
Computer Services Specialist III

Elizabeth McDonald
Systems Support Specialist I

Doria Moore
Accountant III

Mary Ellen Mount
Administrative Coordinator

Marilouise Mycko
Program Manager

Janet M. Myrick
Administrative Assistant II

Jacqueline L. Nemeth
Senior Information Specialist

Linda Newton
Administrative Assistant II

Jalisa Norton
Program Coordinator II

Julie Peterson
Academic Advisor I

Rachel Melton Ponder
Systems Support Specialist II

Sheree Posey
Accountant III

Mary Render
Accountant III

Allen Robinson
Laboratory Manager I

Carl A. Rust
Business Operations Manager

Gwendolyn Satchel
Administrative Assistant II

Leslie Schlag
Administrative Assistant II

Tammy Scott
Administrative Assistant II

Nancy Sandlin
Associate Director of Development

Purnima Sharma
Program Coordinator II

James Steinberg
Electronics Technician III

Florence I. Stoia
Program Coordinator II

Brian Strickland
Programmer I

Christine Sun
Programmer III

Dean C. Sutter
Electronics Technician III

Denise D. Taylor
Program Coordinator II

Marvin Tingler
Head-Supply and Materials

Janet Tippens
Information Analyst II

Michael Toole
Electronics Technician II

Jacqueline Trappier
Administrative Supervisor II

Alvis Turner
Assistant to the Director for NEETRAC Operations

Richard Turner
Electronics Technician II

Todd E. Whitehurst
Systems Support Specialist III

Rochelle Y. Williams
Accountant III

Suzzette Willingham
Program Coordinator I

Angela Yvonne
Administrative Assistant II

Carla Zachery
Administrative Manager I
Validation of PBITS Could Save Power, Increase Speed of Computing Devices

For millions of users of computer devices requiring frequent recharging such as cell phones and MP3 players, new technology, developed by ECE researchers, could mean no longer being tethered to their chargers. Krishna V. Palem, a computer engineering professor and director of the Center for Research on Embedded Systems and Technology, and his team confirmed his earlier probabilistic bits, or PBITS, discovery from Spring 2004 by producing a device based on this cutting-edge new approach to making computer chips significantly more energy efficient. The validation of PBITS is most significant in the area of reduced power consumption and increased processing speeds, resulting in computer devices that run faster and use energy more efficiently. Dr. Palem’s PBITS model is now backed by measurements of an actual probabilistic CMOS device, known as PCMOS, that takes advantage of noise at the quarter-micron level to realize the probabilistic behavior resulting in great noise and energy savings—increasingly important factors as semiconductors approach the nanoscale. http://www.gatech.edu/news-room/release.php?id=514

Nuclear Powered Mission May Unlock Solar System Secrets

A 12-month planning study, conducted by a diverse team of experts led by Boeing Satellite Systems and funded by NASA, may begin to reveal some of our solar system’s most elusive secrets about the formation of its planets—and recently discovered ones that developed around other stars. ECE Professor Paul G. Steffes is a member of the Neptune team, one of 15 “Vision Mission” studies aimed at developing concepts in the United States’ long-term space exploration plans. The focus of the mission to Neptune and its moons—expected to launch between 2016 and 2018 and arrive around 2035—is to discover some of our solar system’s most elusive secrets about the formation of the outer planets and how “adopted children” like Triton, one of Neptune’s moons, has affected that development. The mission will employ electrical and optical sensors aboard the orbiter and probes for sensing the nature of Neptune’s atmosphere. Mission designers also face challenges in transmitting data from the probes through Neptune’s radiowave-absorbing atmosphere. Dr. Steffes’ lab at Tech has conducted extensive research and has gained a thorough understanding of how to address this problem. http://gtresearchnews.gatech.edu/newsrelease/neptune.htm

Sensing Danger: Improving Response to Chemical, Biological Attacks

Should terrorists ever use chemical or biological weapons against the U.S., new sensing technologies under development in ECE could help public safety officials respond more rapidly and effectively to the threats. Led by ECE Associate Professor Stephen E. Ralph, researchers in ECE, the School of Chemical and Biomolecular Engineering, and at several other universities are developing integrated micro-optical sensors for chemical and biological agents of national security concern. The goal is to merge optical sensing technology with highly integrated electrical circuits into a fully integrated sensing system on a silicon chip. The advantages of this system will be better performance, a smaller size that uses less power, full integration, and a low cost of only a few dollars per chip. This proof-of-concept stage of the research—funded by DARPA through the University of Illinois—concluded in December 2004. Additional funding will enable tests of “mock” agents with similar chemical composition to substances that terrorists might use. http://gtresearchnews.gatech.edu/newsrelease/danger.htm
COPE Researchers Developing Organic Solar Cell

Center for Organic Photonics and Electronics are using pentacene, a polycrystalline, and C60, a form of carbon known as “buckyballs” to create a new breed of solar cells that are lighter, flexible, and less expensive to produce. Made from cheaper, organic materials, the cells’ flexibility and feather-weight construction promise to open new markets for solar energy, potentially powering everything from RF identification tags to iPods and laptop computers.

The solar cells are still at least five years away from residential applications, according to ECE Professor Bernard Kippelen, but he estimates that they will be ready to use in smaller devices, such as RFID tags, used by some retailers to control inventory and in sensor networks, within two years. To capitalize on the commercial aspect of this research, Dr. Kippelen and his colleagues in COPE have started LumoFlex, a spin-off company based at Tech. http://www.gatech.edu/news-room/release.php?id=497

GTMax Test Flight Successful, Moves toward Military Use

Unmanned aerial vehicles are one step closer to someday matching—and possibly surpassing—their human-piloted counterparts, thanks to the successful test flight of GTMax, sponsored by DARPA and the U.S. Air Force Research Laboratory. Based on this UAV success, Georgia Tech has now been awarded funding for two follow-on programs for multiple UAVs in an urban warfare environment and for transitioning the technologies developed under the DARPA/Air Force program to military vehicles.

Tech’s primary contribution to the overall project was continuing work started by Boeing on the new software enabled control system, an Open Control Platform, which gives the UAV the ability to reconfigure its software systems autonomously in flight. The final test, conducted at the Military Operations Urban Terrain site at Fort Benning, Ga., successfully demonstrated its capabilities of flight control fault identification and reconfiguration, adaptive control, and agile maneuvering. Georgia Tech’s principal investigators on the project were ECE Professor George J. Vachtsevanos and Daniel Schrage and Eric Johnson, professors in the School of Aerospace Engineering. http://www.gatech.edu/news-room/release.php?id=515

Samsung Design Center Established at GEDC

Samsung Electro-Mechanics Company, Ltd. announced the establishment of a Georgia-based design center to develop next-generation radio frequency integrated circuit technology. SEM, a corporation within the Samsung group, is a global leader in semiconductor, telecommunications, digital media, and digital convergence technologies.

The Center, to be housed initially in the Georgia Electronic Design Center on the Georgia Tech campus, will become the company’s principal North American research location and will emphasize high-speed RFIC technologies and expertise. Chang-Ho Lee, formerly with GEDC and a 2001 ECE Ph.D. graduate, has been named director of the Samsung Design Center. As the new design center expands over the next few years, the company plans to extend its cooperation with the Institute and Atlanta to include packaging technology. The activity will provide opportunities for students to gain real-world design experience and potential collaborations in cognitive radio and power amplifiers, already strong research areas for ECE and Georgia Tech. http://www.gatech.edu/news-room/release.php?id=609

Officials of Samsung, the State of Georgia, and Georgia Tech officially open the new Samsung design center at the Georgia Electronic Design Center in Atlanta. Pictured (l-r) are Craig Lesser, commissioner of the Georgia Department of Economic Development; Ho-Moon Kang, CEO of Samsung; Jean-Lou Chameau, provost of Georgia Tech; Byeong-Choon Koh, chief technical officer of Samsung; and Mike Cassidy, president of the Georgia Research Alliance.
Adaptive Arrays Improve Access to NASA Satellite Data

A new adaptive array system being studied by NASA and Georgia Tech researchers could dramatically decrease the cost of building and maintaining ground stations, thus enabling cost-effective construction of many more ground stations and revolutionizing the way that the space agency obtains data from its Earth observing satellites. Ultimately, this system could make information from NASA’s Earth-observing satellites more widely and rapidly available. The “off-the-shelf” technology—developed by ECE Professor Mary Ann Ingram and her research group—has already demonstrated that it can successfully receive one satellite telemetry frequency.

The adaptive arrays are built from inexpensive components, including common PVC piping and aluminum foil. Signals from the four antennas are analyzed using a processing technique that learns to improve its performance by constructively combining scattered and reflected versions of the signal and by suppressing noise and interference. That eliminates the need for costly front-end hardware and precise aiming of the antenna arrays, and allows flexibility in the location of the ground station. In tests conducted at the Tech campus, the researchers were able to downlink EO-1 information in the S-band, a frequency used for transmissions at low data rates.

http://gtresearchnews.gatech.edu/newsrelease/adaptive-array.htm

CardioMEMS Creates Devices to Monitor Heart Patients

A graduate company of Georgia Tech’s Advanced Technology Development Center, CardioMEMS is pioneering a new breed of testing devices to monitor heart patients by combining wireless communications technology with MEMS fabrication. Launched in 2001, CardioMEMS was co-founded by Jay Yadav, a cardiologist and director at the Cleveland Clinic Foundation, and Mark G. Allen, Joseph M. Pettit Professor in Microelectronics and co-director of the Center for MEMS and Microsystems Technologies in ECE.

In June 2004, CardioMEMS began clinical trials in the U.S. for its EndoSensor™, which measures blood pressure in people who have abdominal aortic aneurysms. Doctors can treat the aneurysm with a stent graft, but it can fail, resulting in blood leakage into the aneurysm, which can cause it to burst. CardioMEMS’ biocompatible sensor, which is implanted with the stent, provides more effective monitoring than CT scans, plus it is cheaper and more convenient.

CardioMEMS conducted its first U.S. implants at the Cleveland Clinic in July 2004, and within a year, more than 100 patients had received sensor implants. Clinical trial data has been submitted to the U.S. Food and Drug Administration, with permission to commercialize the EndoSensor anticipated by the end of 2005.

http://gtresearchnews.gatech.edu/newsrelease/cardiomems.htm

(top) Close-up image of a CardioMEMS pressure sensor. The device, implanted along with a stent graft to wirelessly measure pressure, is currently undergoing clinical trials.

CardioMEMS engineer Michael Fonseca uses a laser to separate pressure sensors in the company’s clean room facility in the ATDC Biosciences Center located at Georgia Tech’s Environmental Science and Technology Building.
The ECE Office of External Affairs—led by Suzy Briggs and Nancy J. Sandlin—cultivates and coordinates the School’s development and fundraising efforts with industry, alumni, and other interested individuals and organizations. ECE External Affairs also manages the School’s Industrial Partnership Program, and it supports and coordinates all ECE consortia organized under the IPP umbrella. In addition, this office also plans twice-yearly ECE Advisory Board meetings and the annual James R. Carreker Distinguished Lecture, and it also works in cooperation with the College of Engineering and the Institute’s Central Development Office to produce events of interest to both alumni and current and prospective donors.

Eight ECE Alumni Honored at College of Engineering Alumni Awards

The College of Engineering held its annual alumni awards induction ceremony in November 2004 at the Grand-Hyatt Atlanta. Eight ECE alumni were inducted into distinct groups of honor—the CoE Hall of Fame, the CoE Academy of Distinguished Engineering Alumni, and the CoE Council of Outstanding Young Engineering Alumni.

COLLEGE OF ENGINEERING HALL OF FAME
Membership in the CoE Hall of Fame is reserved for individuals who have made sustained and meritorious engineering and/or managerial contributions during their careers. Of a total of 14 inductees, three were ECE alumni.

E. Calvin Johnson
B.E.E. ’47
Vice President for Engineering
UBC, Inc.
Tampa, Fla.

M. David Prince
B.E.E. ’46, M.S.E.E. ’49
Senior Staff Specialist (Retired)
Lockheed Aeronautical Systems Company
Atlanta, Ga.

Roger P. Webb
Ph.D.E.E. ’64
Steve W. Chaddick School Chair
School of Electrical and Computer Engineering
Georgia Institute of Technology
Atlanta, Ga.

COUNCIL OF OUTSTANDING YOUNG ENGINEERING ALUMNI
Membership in the Council of Outstanding Young Engineering Alumni is bestowed upon alumni under 40 years of age who have demonstrated outstanding professional achievements. Of a total of eight inductees, one was an ECE alumnus.

Alan F. Krauss
M.S.E.E. ’95, Ph.D.E.E. ’98
Principal Engineer
Schneider Electric
Raleigh, N.C.

ACADEMY OF DISTINGUISHED ENGINEERING ALUMNI
The College awards membership in the Academy of Distinguished Engineering Alumni to persons whose contributions to Georgia Tech, the engineering profession and field, and/or society have brought distinction to themselves and to the Institute. Of 18 total inductees, four were ECE alumni.

Richard J. Codding
B.E.E. ’66
Partner
Akin Gump Strauss Hauer and Feld, LLP
Los Angeles, Calif.

Stefan V. Stein
B.E.E. ’77
Partner, Intellectual Property Group
Holland and Knight, LLP
Tampa, Fla.

Ronald S. Slaymaker
B.E.E. ’82
Vice President, Investor Relations
Texas Instruments
Dallas, Tex.

Randy I. Walker
B.E.E. ’81, M.S.E.E. ’92
General Manager
AP Business Transformation
IBM
Shanghai, China
During FY 2005, corporations, non-profit organizations, and individual donors contributed $12,331,549 to ECE through the Georgia Tech Foundation. The first table shows the amount of funds designated for specific categories. The second table alphabetically lists the various companies, constituencies, and individuals that donated funds to ECE.

**COMPANIES**

- ABB, Ltd.
- Agilent Technologies, Inc.
- Altera Corporation
- Aluminum Company of America
- American Electric Power Company, Inc.
- Analog Devices Corp.
- Ansoft Corp.
- ARRIS Group, Inc.
- Asahi Chemical Industry Company, Ltd.
- Asahi Glass America, Inc.
- AT&T Corporation
- Atotech Deutschland GMBH
- BARCO Display Systems
- BellSouth Telecommunications, Inc.
- BP Solar International, LLC
- Broadcom Corporation
- Cermet, Inc.
- Chevron Texaco Corporation
- Ciena Corporation
- Cingular Wireless
- Cisco Systems, Inc.
- Comcast Cable Corporation
- ComEd
- Consolidated Edison Company of New York, Inc.
- Cooper Power Systems
- Cree Microwave, Inc.
- Dell Computer Corporation
- DoCoMo Communication Labs
- Dominion Virginia Power
- Dow Chemical Company
- Duke Energy Company
- EMS Technologies, Inc.
- Entergy Services, Inc.
- Exxon Mobil Corporation
- Framatome ANP, Inc.
- Freescale Semiconductor, Inc.
- Georgia Power Company
- Harimatec, Inc.
- Hewlett-Packard Company
- IBM Corporation
- ICON Intervisional Systems, Inc.
- Integrated Device Technology, Inc.
- Intel Corporation
- Lancope, Inc.
- Lockheed Martin Corporation
- LSI Logic Corporation
- Matsushita Electric Industrial Company, Ltd.
- Microsoft Corporation
- Microwave Bonding Instruments
- Milliken and Company, Inc.
- Mitsubishi Electric Information Technology Center America
- Motorola, Inc.
- National Semiconductor Corporation
- NGK Spark Plug Company
- Nippon Telegraph and Telephone Corporation
- Northrop Grumman Corporation
- Nova-Borealis Compounds, LLC
- Oak-Mitsui
- OFS Fitel, LLC
- Pepco
- Pirrelli Cable Corporation
- Polaris Wireless, Inc.
- Procter and Gamble Company
- Public Service Electric and Gas Company
- Quellan, Inc.
- Raytheon Company
- Rohm and Haas Company
- RWE SCHOTT Solar
- SAMEER
- Samsung SDI Company, Ltd.
- Schlumberger
- Schlumberger, Ltd.
- Semiconductor Research Corporation
- Sharp Labs of America
- Siemens AG
- Siemens Information and Communications Mobile, LLC
- Sonoscan, Inc.
- South Carolina Electric and Gas Company
- Southern California Edison Company
- Southern Company
- Southern States, Inc.
- Southwire Company
- Taiwan Semiconductor Manufacturing Company, Ltd.
- Teijin Kasei America, Inc.
- Tellabs
- Texas Instruments, Inc.
- Texas Utilities Company
- Thomas and Betts Corporation
- Tyco Electronics Corporation
- Union Carbide Corporation
- Xilinx, Inc.

**Gift Category** | **Total**
--- | ---
Endowment | $1,335,377.85
Equipment | $673,413.41
Faculty Support | $3,397,911.27
Fellowships | $123,133.28
General Support | $85,395.56
Memberships | $6,267,863.20
Scholarships | $410,465.00
Student Support | $39,990.00
**Grand Total** | **$12,331,548.57**

**New Associate Director of Development**

Nancy J. Sandlin joined ECE in July 2004 as the new associate director of Development, where she is responsible for the School’s industrial relations and fundraising activities. She replaced Harry L. Vann who was named director of Georgia Tech’s Office of Corporate Relations. A Tech alumna (BMGT ’92), Ms. Sandlin has worked in corporate affairs and external relations for over 12 years.

**PROFESSIONAL, RESEARCH, AND ACADEMIC ORGANIZATIONS**

- American Society for Engineering Education
- Information Storage Industry Consortium
- Institute of Microelectronics
- Purdue University
- SRC Education Alliance
- Transducers Research Foundation
Siemens Partners with GEDC to Create Next Generation of Wireless Products

Furthering its commitment to providing advanced telecommunications technology to the U.S. market, Siemens Communications, Inc. joined forces with GEDC to create the next generation of wireless (3G) products and applications. Siemens is providing financial support, which will enhance its ability to create next generation voice, wireless data, and IP-based multimedia subsystem applications for its U.S. customers.

In addition to a monetary contribution, Siemens is donating a variety of its 3G wireless network infrastructure equipment and technology, including Siemens IMS platforms and 3G network components, to a newly constructed state-of-the-art testbed in GEDC. The facility, equipped with the latest 3G/UMTS technology from Siemens, will focus on developing state-of-the-art IMS applications for Siemens and U.S. carriers. Both Georgia Tech and Siemens Communications personnel will staff the facility.

Next generation applications range from high-speed access to the Internet and wireless video and audio for business customers, as well as a wide variety of services such as high-resolution digital image transfer, full-motion video, location and presence-based services, fixed mobile convergence, voice over IP, and advanced interactive gaming.

(l-r) Joy Laskar, GEDC Director; Detlev Otto, Siemens SAG, head of Development for Next Generation 3G Radio Access Networks; Robert (Bob) Capps, Siemens VP Cingular Account; Mike Cassidy, president of the Georgia Research Alliance

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**FOUNDATIONS/NON-PROFIT ORGANIZATIONS**

- Community Foundation for Greater Atlanta
- John and Mary Franklin Foundation, Inc.
- GE Foundation
- General Motors Foundation
- Harris Foundation
- Intel Foundation
- Lockheed Martin Corporation Foundation
- Motorola Foundation
- National Instruments Foundation
- Netherlands-America Community Trust
- Otto and Jenny Krauss Charitable Foundation Trust
- Square D Foundation

**INDIVIDUALS**

- Han A.M. Al-Ansary
- C. Dean Alford
- Warren Batts
- Harry L. Beck
- Stanley Belyeu
- Henry C. Bourne
- R.N. Boyd
- Suzy Briggs
- Michael J. Buckler
- Lynda D. Buescher
- Robert J. Butera
- Michael A. Coleman
- Thomas R. Collins
- J. Alvin Connelly
- Leyla S. Conrad
- Sharon K. Crouch
- Robert G. Dawson
- Howard G. Dean
- R. Thomas Dyal
- H. Allen Ecker
- Thomas A. Edwards
- Aldo A. Ferri
- Thomas K. Gaylord
- Terry Hall
- Leonard J. Haynes
- E. Calvin Johnson
- Jan Kolnik
- Alan F. Krauss
- Thomas R. Lee
- Judith Lorier
- Kenneth E. MacKenzie
- Joseph E. Mayes
- Lea A. McLees
- Norma J. McLees
- F.B. “Duke” Mewborn
- Douglas W. Olsen
- Elsie E. Paris
- John B. Peatman
- Claude A. Petty
- John E. Pippin
- Leonard E. Prince
- Hans B. Püttgen
- Thomas J. Quigley
- Marvin O. Richter
- David W. Salter
- Nancy J. Sandlin
- William E. Sayle
- Paul Sheehy
- Stefan V. Stein
- C. Meade Sutterfield
- Howard A. Thrailkill
- Joe L. Trantham
- Kristin Turgeon
- Harry L. Vann
- Randy I. Walker
- Phyllis F. Warrilow
- Roger P. Webb
- The Honorable Daniel A. Webster
- Luis M. Zuniga, Jr.
An outside perspective is essential to maintaining the relevancy of the School’s programs to its alumni and corporate constituencies. The ECE Advisory Board, composed of mostly alumni industry representatives, provides this external assessment during its formal, biannual meetings and throughout the year. Led by C. Meade Sutterfield, the Board had 21 members in FY 05.

The School of ECE added three new advisory board members—Mel Coker (BEE ’87), Sherra Kerns, and Theresa Maldonado (BEE ’81, MSEE ’82, and PhD ’90)—in fall 2004, all who represent companies and universities that have strong corporate and academic ties with ECE and Georgia Tech. Ms. Coker is the executive director of BellSouth’s Corporate Strategy and Planning. Prior to her current position, she was the general manager of BellSouth Mobility for Middle Georgia and worked in regional operations for BellSouth’s start-up video business. In 2000, Ms. Coker was named Georgia Tech’s Outstanding Young Alumna and was inducted into the CoE’s Council of Outstanding Young Engineering Alumni. Dr. Kerns is the vice president for Innovation and Research at Olin College and is also the F.W. Olin Professor of Electrical and Computer Engineering. A Fellow of the IEEE, Dr. Kerns is the recipient of the IEEE Millennium Medal and the Harriett B. Rigas Award, given by the IEEE Education Society. Dr. Maldonado is currently the associate dean for the Dwight Look College of Engineering at Texas A&M University, the associate director of the Texas Engineering Experiment Station, and a professor in the Department of Electrical Engineering. She was inducted into the inaugural group of the Council of Outstanding Young Engineering Alumni in 1995.

The 2004-05 advisory board members and their affiliations are listed below.

C. Dean Alford
Allied Utility Network
Conyers, Ga.

Antonio R. Alvarez
Cypress Semiconductor (Retired)
San Jose, Calif.

Michael B. Bartlett
Dallas, Tex.

Michael Buckler
Lucent Technologies
Cary, N.C.

Steve W. Chaddick
CIENA Corporation (Retired)
Alpharetta, Ga.

Mel Coker
BellSouth
Atlanta, Ga.

Michael A. Coleman
Winter Garden, Fla.

H. Allen Ecker
Scientific-Atlanta, Inc.
Lawrenceville, Ga.

Kelvin C. Hawkins, Sr.
IBM
Research Triangle Park, N.C.

Leonard Haynes
The Southern Company
Atlanta, Ga.

Sherra E. Kerns
Olin College
Needham, Mass.

Fred Kitson
Motorola
Schaumburg, Ill.

Scott Madigan
Tphone.us
Cumming, Ga.

Jim Maran
Gwinnett County Chamber of Commerce
Duluth, Ga.

Michael R. McQuade
DuPont Company
Wilmington, Del.

Theresa Maldonado
Texas A&M University
College Station, Tex.

Joe Neel
Smith Barney
Birmingham, Ala.

E. Jock Ochiltree
St. Augustine, Fla.

Randall E. Poliner
Antares Capital Corporation
Melbourne, Fla.

At the fourth annual School of Electrical and Computer Engineering Awards Program, held on April 28, 2005, C. Meade Sutterfield, chair of the ECE Advisory Board, announced that the Board is endowing the ECE Awards Program in honor of Roger P. Webb, who retired as the Steve W. Chaddick School Chair in December 2004, for his vast contributions to ECE and Georgia Tech spanning more than 40 years.

Starting in 2006, the event will be known as the Roger P. Webb Awards Program in the School of Electrical and Computer Engineering. Mr. Sutterfield, who has hosted the event for the last two years, and his fellow advisory board members consulted with Dr. Webb, and all agreed that this annual awards program—which honors outstanding ECE students, faculty, and staff—should continue in future years. This tribute honors Dr. Webb’s leadership which has enabled the School to achieve its phenomenal success.
## ECE STATE BUDGET AND EXPENDITURES

<table>
<thead>
<tr>
<th>State Budget (Initial FY 05 allocation - $16,935,000)</th>
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<tbody>
<tr>
<td>Salaries and Fringe</td>
<td>$21,504,376</td>
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<tr>
<td>Travel</td>
<td>119,951</td>
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<tr>
<td>Materials and Supplies</td>
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<tr>
<td>Equipment</td>
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<td><strong>Total</strong></td>
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<th>Departmental Sales and Service</th>
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<td>Salaries and Fringe</td>
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<td>Travel</td>
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<td>Materials and Supplies</td>
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<td>Equipment</td>
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<td><strong>Total</strong></td>
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<th>Research Consortium (State Research–GEDC)</th>
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<td>Materials and Supplies</td>
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<td>Equipment</td>
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<td><strong>Total</strong></td>
<td><strong>$2,496,443</strong></td>
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**Final State Expenditures** $26,955,480

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<th>Sponsored Expenditures*</th>
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<td>Travel</td>
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<td>Materials and Supplies</td>
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<td>Equipment</td>
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<td>Other (GTF Direct)</td>
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<td>Indirect (O/Head)</td>
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<td><strong>Total</strong></td>
<td><strong>$41,333,207</strong></td>
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*Includes Georgia Tech Foundation

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### GLOSSARY OF ACRONYMS

This list covers the meanings of abbreviations found throughout the 2004-05 Annual Report for the School of Electrical and Computer Engineering.

#### Awards
- PECASE – Presidential Early Career Award in Science and Engineering

#### Georgia Tech/ECE
- ATDC – Advanced Technology Development Center
- CoC – College of Computing
- COPE – Center for Organic Photonics and Electronics
- CoE – College of Engineering
- CREST – Center for Research on Embedded Systems and Technology
- ECE – Electrical and Computer Engineering
- FACES – Facilitating Academic Careers in Engineering and Science Program
- GCATT – Georgia Centers for Advanced Telecommunications Technology
- GEDC – Georgia Electronic Design Center
- GTAC – Georgia Tech Analog Consortium
- GTREP – Georgia Tech Regional Engineering Program
- GTRI – Georgia Tech Research Institute
- GTS – Georgia Tech Savannah
- HKN – Eta Kappa Nu
- PRC – Packaging Research Center
- SURE – Summer Undergraduate Research in Engineering/Science Program
- TSRB – Technology Square Research Building
- WECE – Women of Electrical and Computer Engineering
- WIE – Women in Engineering

#### Companies and Organizations
- ASEE – American Society for Engineering Education
- ECEDHA – Electrical and Computer Engineering Department Heads Association
- FIRST – For Inspiration and Recognition of Science and Technology
- GRA – Georgia Research Alliance
- HP – Hewlett-Packard
- IEEE – Institute of Electrical and Electronics Engineers
- KETI – Korean Electronics Technology Initiative
- OSA – Optical Society of America
- PES – Power Engineering Society (a technical interest society of IEEE)
- SRC – Semiconductor Research Corporation

#### Governmental Agencies and Universities
- DARPA – Defense Advanced Research Projects Agency
- ERC – Engineering Research Center (National Science Foundation)
- FDA – Food and Drug Administration
- MIT – Massachusetts Institute of Technology
- NASA – National Aeronautics and Space Administration
- NSF – National Science Foundation
- NTU – Nanyang Technological University
- NUS – National University of Singapore
- SJTU – Shanghai Jiaotong University

#### Technical Abbreviations
- BiCMOS – Bipolar Complementary Metal Oxide Semiconductor
- CAD – Computer Aided Design
- CMOS – Complementary Metal Oxide Semiconductor
- CSMA – Carrier Sense Multiple Access
- GSI – Gigascale Integration
- HBT – Heterojunction Bipolar Transistor
- IC – Integrated Circuit
- IMS – IP-Based Multimedia Subsystem
- LAN – Land Area Network
- LET – Linear Energy Transfer
- MAC – Medium Access Control
- MIMO – Multiple Input Multiple Output
- MEMS – Microelectromechanical Systems
- OCP – Open Control Platform
- OFDM – Orthogonal Frequency Division Multiplex
- PCMOS – Probabilistic Complementary Metal Oxide Semiconductor
- Q – Quality
- QoS – Quality of Service
- RF – Radio Frequency
- RFIC – Radio Frequency Integrated Circuit
- RFID – Radio Frequency Identification
- SEC – Software enabled control
- SIMD – Single Instruction, Multiple Data
- SOC or SoC – System-on-a-Chip
- SOP or SoP – System-on-a-Package
- UAV – Unmanned aerial vehicle
- ULSI – Ultra Large Scale Integration
- UMTS – Universal Mobile Telecommunications System
- VCSEL – Vertical Cavity Surface Emitting Laser
- VLSI – Very Large Scale Integration
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404.894.4740 Associate Chair for ECE Undergraduate Affairs, Douglas B. Williams
404.894.2975 Associate Chair for ECE Academic Operations, Joseph L.A. Hughes
404.894.2927 Associate Chair for ECE External Affairs, Hans B. Püttgen
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404.894.2983 Graduate Affairs
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