Annual Report

2005-2006

Electrical and Computer Engineering

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The ECE Department completed a successful year, with numerous achievements of note. In particular, the department completely vacated Daniels Hall, and moved into the new EB2 Building on Centennial Campus.

The department faculty and staff have identified many goals over the last year that we as a department worked together to accomplish. One of the goals of this administration was to strengthen departmental ties to industry by building relationships with corporate representatives. One outcome of this goal was to establish and organize an ECE Advisory board. ECE hosted the first advisory board meeting under current administration on April 21, 2006. The advisory board consisted of over 12 company and academic representatives. Advisory board meetings will continue to meet in the fall and spring of each year. A corporate website was also constructed to highlight academic and industry relations within the department.

Another goal of this administration was to establish and organize various committees within the department to support initiatives as established by the college and university. New Committees include:

- Report, Promotion and Tenure (RPT): organize nominations of candidates for presentation to the DVF. This was a beta test year, and the experiment was successful. Process will be continued.
- Outreach: Committee members have visited local K-12 schools and made demonstrations, hosted middle and high schools in the labs, set up an internal program for all research areas to participate in Outreach activities, working with teachers in middle schools to get out the msg. that "Engineering is Cool".
- Undergraduate Research: The department established a formal committee to promote UG research in ECE. A website was created with projects posted by faculty who are providing research opportunities for ugrad students. The First ECE Undergraduate Research symposium was held this year with awards going to poster and presentation winners. This committee is also in the process of submitting a proposal for a formal REU program

Open House was the most successful to date. With the move to the new building, we wanted to make sure all labs were open and demonstrations were available in each lab to showcase the exciting research activities in the department. Faculty representatives and graduate students from every research group in the department participated in Open House with presentations, demonstrations, and talking to prospective students and parents.

Another highlight of this year was the improved student organization involvement. The administration is dedicated to working with student organizations so they can be as successful as possible. As a result of increased departmental involvement with student organizations and increased student involvement and outstanding student leadership our

student organizations received a 2005 HKN Outstanding Chapter Award and an IEEE Exemplary Student Chapter Award. Both of these awards were from the national headquarters of HKN and IEEE and based upon national competitions.

The department is making great effort to increase minority enrollment. Departmental faculty are looking at avenues for recruiting minorities for graduate school.

Two ECE faculty, Profs. Alex Huang and Paul Franzon, were elected to IEEE Fellow grade.

Three ECE Department faculty, Profs. Wenye Wang, Do Young Eun, and Doug Barlage, were awarded NSF CAREER awards to support their research.

The Semiconductor Power Electronics Center (SPEC) was established this year with Prof. Alex Huang as Director. The SPEC Center is housed in space in the Partners I building on Centennial Campus.

Undergraduate program

ECE Department undergraduate enrollment continues to be strong, despite enrollment decreases experience nationwide. This past year the department had:

1425 Undergraduate enrolled
113 BS CPE degrees Awarded
168 BS EE degrees awarded
 65 departmental scholarships awarded

Graduate & Research Program

Graduate program enrollment also remains strong, with 482 graduate students enrolled in the department's seven major research areas. Research funding increased slightly from the previous year and is now about $12M from external research accounts and approximately $17M from all sources.

Graduate degrees conferred in May 2006 included 51 M.S. degrees, with 8 in Computer Networking, 23 in Computer Engineering, and 28 in Electrical Engineering. The department also conferred 23 Ph.D. degrees, with 6 in Computer Engineering and 17 in Electrical Engineering.

For the Spring 2006 semester, the graduate enrollment by program was:

	MS	PhD
CNE Computer Networking - Electrical Eng	23	0
CPE Computer Engineering	78	65
EE Electrical Engineering	153	154
Total	254	219

Faculty and staff Activities:

During the past year the ECE Department faculty were very active in pursuing their activities in teaching, research, and outreach. Professional service is a high calling, and ECE Department faculty are heavily engaged. Faculty activities included the following:

Profs. Leda Lunardi and Jim Mink served as Program Managers in the ECS Division of NSF

Prof. Wes Snyder served as a Program Manager at the Army Research Office. He was also chosen by the IEEE Robotics and Automation Society as General Chair of the International Conference on Robotics and Automation, 2010, Anchorage.

Prof. Michael Steer was named the Lampe Professor of ECE. Steer also served as Editor-in-Chief of the IEEE Transactions on Microwave Theory and Techniques

Prof. Robert Trew served as an IEEE MTT Society Distinguished Lecturer and gave numerous talks, both nationally and internationally. Prof. Trew also served as immediate Past President of the IEEE MTT Society and Chaired the MTT Society ADCOM Long Range Planning Committee. He also continued to serve on the Editorial Board of the IEEE Proceedings and was named an Associate Editor for the IEEE Sensors Journal. Prof. Trew was a Guest Co-Editor for a Special Issue of the IEEE Proceedings on the subject of Blue Sky Technologies. Prof. Trew also delivered the Keynote talk at the International Spectral Sensing Research Conference held in Bar Harbor, ME, in May.

Professor Leda Lunardi serves on 8 IEEE committees, being chair for 3, and serves on the Scientific Advisory Board for the 2006 Conference on Optoelectronic and Microelectronic Materials and Devices (COMMAD). This year, too, she co-chaired a successful NC Photonics Initiative Forum with academia and industry from the Carolinas.

Dr. Hamid Krim was invited to be a panelist in the newly established Irish Research Council (Irish NSF) and he launched a new interdisciplinary Distinguished seminar series with ARO funding. Additionally, his co-edited book "Statistics and Analysis of Shapes" hit the stands.

Professor Paul Franzon was selected as co-chair of the IEEE Topical Workshop on electrical Performance of Electronic Packaging.

Dr. Mo-Yuen Chow serves ad associate editor of IEEE Transactions on Industrial Electronics, was General Chair of the 32nd IEEE Industrial Electronics Society Conference (IECON'05) November 6-10, 2005, and is Vice President for Publications for IEEE Industrial Electronics Society.

Prof. Gianluca Lazzi received research news coverage by the News and Observer (front page), WRAL News at 5 (feature story of the health section); the Rocky Mount Telegram; TV show Jeopardy!; and numerous others; he served as chair for Commission K (Electromagnetics in Biology and Medicine) of the US National Committee of the

International Union of Radio Science (URSI); and was organizer and chair of the Plenary talks session at the 2005 URSI National Meeting, Boulder.

Professor Salah Bedair was granted 2 patents; was appointed as co-chair of "Dilute Magnetic Semiconductor Symposium" Material Research Society Spring 2007.

Dr. Mike Devetsikiotis received an appreciation award from IEEE Communications Society for "contributions in furthering the objectives of the society as Chair of the Technical Committee on Communication Systems Integration and Modeling". Currently, he is the co-chair of the IEEE Globecom 2006 Symposium on "Quality, Reliability and Performance Modeling for Emerging Network Services," San Francisco, November 2006.

Dr. Eric Rotenberg was Program Co-Chair for IEEE 39th International Symposium on Microarchitecture (2006). This is the flagship microarchitecture conference. He also is Editor-in-Chief of *Journal of Instruction-Level Parallelism*.

Prof. Tom Conte, Director of the Center for Embedded Systems has been chosen to chair both the IEEE Harry Goode Memorial Award and the W. Wallace McDowell Award committees. Tom was also elected chair of the Association for Computing Machinery (ACM) Special Interest Group on Microarchitecture (SIGMICRO) for a three-year term.

Professor Joel Trussell was elected to the IEEE IMDSP committee.

Tara Britt served on the steering committee of WISE in the NC Technology Association as the NC State University representative.

Tara Britt, Dennis Kekas, Tom Miller and Mark Johnson established the College of Engineering Innovators Forum. More information about this can be found at: http://www.engr.ncsu.edu/innovators/

Awards and honors
Cecilia Townsend, Coordinator for Undergraduate Advising received both the Barbara Soloman Award and Blessis Award for outstanding advising service.

Dr. Brian Hughes was awarded NCSU Outstanding Teacher Award this year by the College of Engineering.

Seminars: Information about ECE Seminars and departmental guests can be found at: http://www.ece.ncsu.edu/calendar/index.php

Staff
Four staff received Pride of the Wolfpack Awards this year; Dan Green, Elaine Hardin, Patrick Murphy and Margaret Hudacko.