THE Whistle

Georgia Tech

PEOPLE

Tech's 11th president talks about new role

Last Wednesday, G.P. "Bud" Peterson, former chancellor at the University of Colorado at Boulder, transitioned to become the new president of Georgia Tech in Atlanta. (WABE radio)

http://tinyurl.com/dxq89y

RESEARCH

Lighting up the world: Suniva tackles solar power

Since the establishment of Georgia Tech's photovoltaic research center in 1985, scientists at the university have been working to make solar energy more efficient and cost-effective. (Atlanta Business Chronicle)

http://tinyurl.com/3pvp3z

NEWS

Building a car just for cops

Researchers at Georgia Institute of Technology are working with engineers from Carbon Motors to design and build a car specifically to help police catch bad guys. The result [is] the E7 sedan. (Machine Design)

http://tinyurl.com/cg93b6

EVENTS

ARTS & CULTURE

Through April 18
"Jekyll and Hyde" begins at DramaTech Theater, starting at 8 p.m. Tickets are $8 for faculty and staff. The show runs through April 18.
www.dramatech.org

April 16
The Georgia Tech Wind Ensemble and Percussion Ensemble perform at 7 p.m. in the Ferst Center for the Arts. Tickets are $10, free to students with their Buzzcard.
www.ferstcenter.gatech.edu

April 18
Bluegrass bands Cherryholmes and the Carolina Chocolate Drops will perform at 8 p.m. in the Ferst Center for the Arts. Tickets are $25 and $35, or $20 and $28 with subscription.
www.ferstcenter.gatech.edu

April 24
The Joe Sample Trio, with jazz pianist Joe Sample, will feature vocalist Randy Crawford at the Ferst Center for the Arts at 8 p.m. Tickets are $40 and $50, $32 and $40 with subscription. Performance was postponed from Oct. 18.
www.ferstcenter.gatech.edu

Through May 22
The Robert C. Williams Paper Museum presents "Jiha Moon/Nate Moore: Recent Works." Museum hours are 9
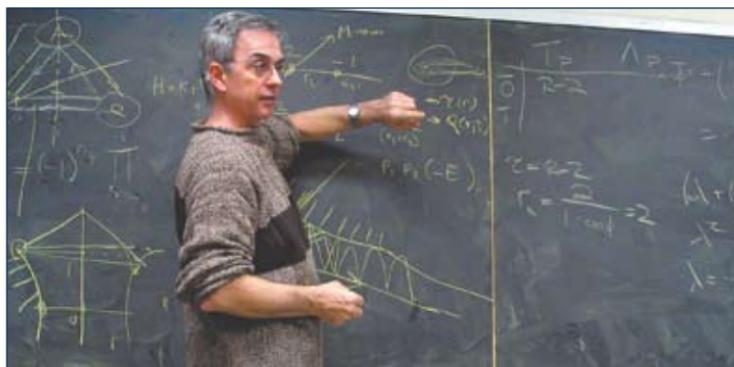
Physics Professor Predrag Cvitanović earned an Alexander von Humboldt Award for his research in turbulence.

Photo courtesy Predrag Cvitanović

Research recognition
Physics Professor Predrag Cvitanović tapped for Humboldt Award

Physics Professor and Glen P. Robinson Chair Predrag Cvitanović is the recipient of a 2009 Alexander von Humboldt Award for his body of work in chaos and turbulence theory.

Cvitanović's award was sponsored by Eberhard Bodenschatz and Theo Geisel, directors of the Max Planck Institute for Dynamics and Self-Organization in Göttingen, Germany. The

Georgia Tech and Max Planck Institute groups' collaborations, researching chaotic dynamics, span over two decades.

Björn Hof's group at the Max Planck Institute is building an experiment to test a theory of boundary shear turbulence developed at Georgia Tech by Cvitanović and J. Ford Postdoctoral Fellow John F. Gibson.

Legislative wrap-up
General Assembly passes budget

ROBERT NESMITH
COMMUNICATIONS & MARKETING

As the 2009 General Assembly closed in the early Saturday morning hours, the legislature had approved the Institute's top three legislative priorities in the fiscal year 2010 (FY10) budget.

In addition to the FY10 budget, which contains USG funding, Gov. Sonny Perdue has 40 days from April 4 to sign or veto the bills passed by both houses. Any bills not vetoed or left unsigned by Perdue will become state law when this time period expires. Perdue has the ability to veto line items in the budget.

"At the beginning of the session, we stated our three legislative priorities for Georgia Tech," said Dene Sheheane, director of Government Relations. "The legislature and the governor, despite a challenging economic environment, supported the Institute by approving these priorities."

Specific to Tech, the legislature awarded the full $43 million requested for the Clough Undergraduate Learning Commons. The budget contains new formula funding of $108 million and $60 million for the Major Repairs and Rehabilitation fund for the University System of Georgia (USG), from which the Institute will receive a percentage. The USG's total FY10 budget, including state and federal funds, is projected to be $2.17 billion, a decrease of $128 million from FY09's original budget of $2.3 billion.

Novels to nanotech
How an English Ph.D. found her niche in Engineering

ROBERT NESMITH
COMMUNICATIONS & MARKETING

Teaching engineering students professional communication skills wasn't exactly what Lisa Rosenstein had in mind while pursuing her doctoral degree in 19th-century British literature at Emory. But her skills, experience and personality have made her a perfect fit for the job.

As the director of the Engineering Communications Programs for the Schools of Civil and Environmental Engineering (CEE) and Materials Science and Engineering (MSE), Rosenstein's mission is to teach both undergraduates and graduates those written, graphical and oral communication skills they need to succeed in the workplace.

"We created this in-house model 11 years ago." Rosenstein said. "The whole idea was new—we didn't have existing models to fashion our program on. We were the leaders. The idea was to teach communication skills within the context of the discipline, and the way we structured the undergraduate program is this: There is no one standalone communications course. Instead, I co-teach all the core courses and integrate different communications skills

Lisa Rosenstein, director of the Engineering Communications Programs for the Schools of Civil and Engineering and Materials Science and Engineering, works with students on written, graphical and oral communications skills.

into each class so that by the end of the students' degree program, they have the complete set of communication skills they will need to succeed in the workplace."

Rosenstein is quick to point out that in-house communications professionals also are on staff in other College of Engineering Schools, like Mechanical Engineering (ME) and Electrical and Computer Engineering (ECE), and the teaching model differs between each school.

"There are many ways to run a successful program. It depends not only on the needs and size of the school, but also on financial and human resources. For example, ECE has teaching assistants and an

undergraduate communications lab. We certainly don't have that in either of my Schools. The important thing is, though, that the needs of students are being met." For those engineering schools that don't have in-house programs, the School of Literature, Communication and Culture offers courses in technical writing.

She is the first person in this role for the two Schools, coming on board in 1998, working 70 percent of the time in CEE and 30 percent in MSE. Her salary consists of money from the MSE budget and donor money in CEE. Named for retired

Research

Following the sun
Application uses mobile phones to alert Muslims to prayer

DAVID TERRASO
COMMUNICATIONS & MARKETING

Religious technology may seem like an oxymoron, but as more people obtain mobile phones, iPhones and other devices to help them manage their lives, it's only natural that many of them will use their gadgets to help them enrich their spiritual lives as well.

Tech researchers have developed a mobile application known as Sun Dial, which alerts Muslim users when it's time to perform the five daily prayers known as salat.

The device was discussed last week at the human-computer interaction conference, CHI, in Boston.

Designing technological devices for religious use may be very different from designing devices for traditional uses in office settings.

"We have to understand religion because it's such a central part of peoples lives," said Susan Wyche, doctoral candidate in the College of Computing and GVU Center. "Efficiency and productivity tend to be driving forces when designing technology for offices, but these are not as central when designing applications for the home or religious settings. Why would you design a device that makes someone pray faster?"

Wyche, along with her research team, chose to focus on Islam for this study, partially because of the religion's popularity worldwide and partially because Muslims

have historically used technology such as compasses and telescopes to help them determine the direction to face during prayer.

Working with seven focus groups, they determined that the greatest interest from the participants lay in prompting them when it was time to pray—not by using text, which some commercial applications use, but through imagery combined with audible alerts.

Sun Dial tells users that the time to pray is approaching by using an image of the sun lining up with a green circle. When the sun lines up with the circle, it's time to pray.

"Unlike similar systems, ours relies on graphics rather than text and graphs to communicate prayer times," Wyche said. "Users drove this choice by telling us that tracking the sun was the most religiously valued method to determine prayer times."

Wyche and colleagues tested their application with Muslims from Georgia Tech and the greater Atlanta area for two weeks with favorable reaction.

The group is currently working on implementing a few design changes such as a digital clock and a vibration alert. Eventually, they plan on making the application available for download.

"Sun Dial provided more than functionality or a prompt to the prayer times," Wyche said. "It also contributed to users' religious experience by reminding them they were part of a larger community. More broadly,

Image provided by Associate Professor Beki Grinter

Sun Dial is a mobile application that uses images to alert users to the five daily prayers of Islam.

carefully considering imagery is important when developing mobile phone applications, particularly ones that support personal and emotional activities, which may be sacred or secular."

The research team was comprised of School of Interactive Computing Associate Professor Beki Grinter, Wyche, and doctoral candidates Kelly Caine, Benjamin Davison and Michael Arteaga.

For more information

www.cc.gatech.edu

www.gvu.gatech.edu

The Humboldt award will enable Cvitanović to visit Göttingen and collaborate on this and other turbulent fluid flow experiments.

"It is an important recognition of Professor Predrag Cvitanović's decades-long research to receive a Humboldt Research Award," said Gary Schuster, provost and executive vice president for Academic Affairs. "Given only to leading researchers in their fields, this honor underscores Dr. Cvitanović's long standing work in chaotic dynamics and turbulence. His international research collaborations also exemplify the global reach of scholarship at Georgia Tech."

In addition to turbulence, Cvitanović's research interests include nonlinear dynamics, chaos, quantum chaos, quantum field theory, statistical mechanics and group theory.

Cvitanović is best-known for his introduction of cycle expansions, based on periodic orbit theory, to approximate chaotic dynamics in a controlled perturbative way. Practical applications include a periodic orbit

theory of quantum chaos, used in atomic, nuclear and chemical physics, and a periodic orbit theory of wave chaos that can be used to test shapes of elastic objects by their acoustic spectroscopy.

He is currently working on completing "Chaos: Classical and Quantum," an advanced, open source graduate online textbook (ChaosBook.org), based on his work with collaborators on classical and quantum chaos.

Cvitanović earned his doctorate from Cornell University in 1973. Prior to joining the Tech faculty in 2001, he was the Carlsberg Foundation Research Professor and director of the Center for Chaos and Turbulence Studies at the Niels Bohr Institute in Copenhagen, Denmark. He is the director of the Center for Nonlinear Science.
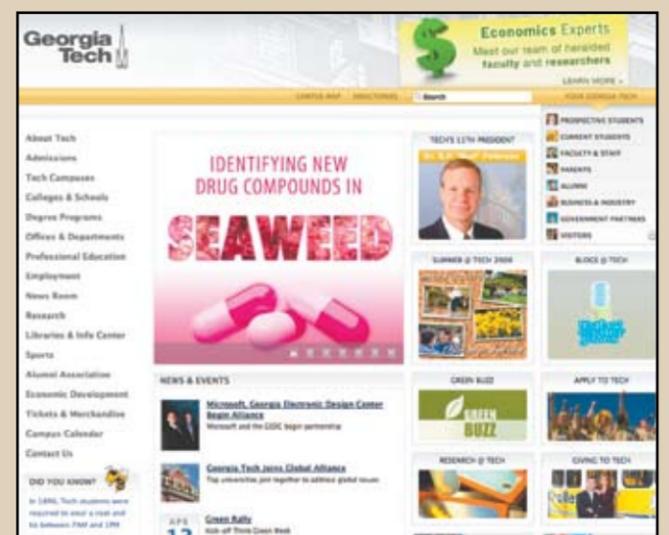
For more information

www.physics.gatech.edu

www.cns.gatech.edu

ChaosBook.org

www.birdtracks.eu

GEORGIA TECH ONLINE

Visit **www.gatech.edu** for the latest information involving the campus community. Learn about exciting research at Tech, and read economic reports from Institute experts. **The Georgia Tech homepage** and the **News Room** will keep you up-to-date regarding the latest stories, events and speakers on campus.

View the latest Institute photos and videos in **Photos@Tech** and **Videos@Tech**, and read the varied voices of Tech's diverse students, faculty and staff featured in **Blogs@Tech**. A host of other resources also are available online, including an updated campus calendar and dedicated faculty and staff resources available within **Tech For You**.

Institute

Micro-partnership

Microsoft, Georgia Electronic Design Center begin alliance

DON FERNANDEZ
COMMUNICATIONS & MARKETING

The Georgia Electronic Design Center (GEDC), the Georgia Research Alliance (GRA), the Georgia Department of Economic Development (GEcDev) and Microsoft Research announced a two-year alliance focused on RF-DNA, a novel technology for radio-frequency identification (RFID). The alliance was kicked off at GEDC's annual Spring Industry Review at Georgia Tech.

Under the alliance, Microsoft Research is investing $600,000 over two years. The new lab's work, which is based on intellectual property from each partner, is providing both basic research into RFID technology and ongoing student education in the field.

"We're extremely pleased to join Microsoft Research and our government partners to advance the growing field of RFID," said Joy Laskar, GEDC director and Schlumberger Chair in Microelectronics in the School of Electrical and Computer Engineering. "We believe this work will result in the development of important research with strong economic potential."

New RFID technologies allow tiny circuits, sometimes printed on paper, to enable secure sharing of product information and other data via wireless networks at low cost. This new collaborative RF-DNA research project will be designed to enable the creation of hard-to-forge certificates of a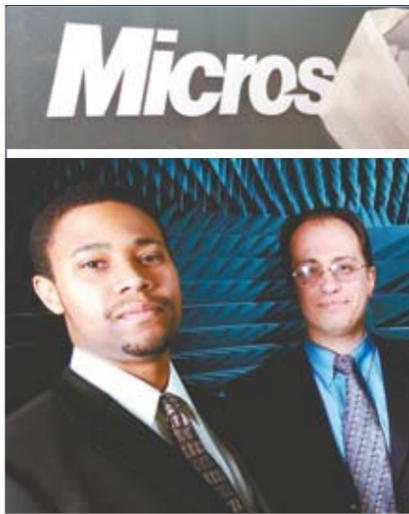uthenticity by exploring the randomness of simple objects in the RF electromagnetic domain. Advances in this area of research could have a significant and positive impact on the pharmaceutical and banking industries.

The collaborative RF-DNA research is expected to lay a foundation for the use of RFID technology in efficient and secure pharmaceutical labeling products.

"Microsoft Research understands the important role academic research plays in driving innovation and industrial advances," said Simon Mercer, director of Health and Wellbeing, Microsoft External Research.

In welcoming the Microsoft partnership, Laskar paid tribute to the support that GEDC has received from its state of Georgia partners: the Georgia Research Alliance (GRA) and the Georgia Department of Economic Development (GEcDev).

"GRA has funded basic research studies at GEDC through its Market Developing Program for the past three years," Laskar said. "That program has the specific objective of producing research that will bring new business partners to Georgia, and we're delighted that Microsoft has joined our list of partner companies."

Professor Manos Tentzeris, right, is co-principal investigator on the RF-DNA project. Gerald DeJean, left, is a Tech graduate now working for Microsoft on RF-DNA technology.

In addition, he added, "the continuing support for our activities that GEDC has received from the Georgia Department of Economic Development has been key to bringing this new RF-DNA Laboratory to Georgia and in recruiting this great company to the city of Atlanta."

Susan G. Shows, senior vice president of GRA, said her organization is gratified by the Microsoft-GEDC agreement.

"This partnership is a strong instance of the supportive effects that the current GRA-GEDC Market Developing Program is having on Georgia's economic outlook," Shows said. "This is the kind of innovation-driven economic development that generates high-value companies and high-wage jobs."

Laskar and GEDC Associate Director Manos Tentzeris will be co-principal investigators on the RFID and RF-DNA research project. Work will be conducted at the new RF-DNA Laboratory, located at GEDC's headquarters in the Technology Square Research Building.

For more information

www.gedcenter.org

On his first official day at Tech, President G.P. Peterson addressed each chamber of the state legislature, and was able to meet individually with several leaders, including Lt. Gov. Casey Cagle.

Photo courtesy Government Relations

BUDGET, continued from page 1

The state budget approves $1.5 million for food processing research and $1.6 million for Georgia's Traditional Industries Program. Sheheane says Tech will benefit from a portion of this funding, due to the research of the Georgia Tech Research Institute and the Enterprise Innovation Institute. The budget also includes $3 million for the USG Science Equipment and Technology fund, which also uses private matching funds.

For FY10, however, the legislature removed $5 million from Tech's Advanced Technology Development Center seed capital fund and $1 million from the Georgia Tech Regional Engineering Program, which enables students in southeast Georgia to earn a bachelor's degree in several engineering disciplines.

2009 highlights

■ Senate Resolution 32 recognized both

Yellow Jackets head football Coach Paul Johnson and sophomore B-back Jonathan Dwyer for their selection as ACC Coach of the Year and ACC Player of the Year.
■ Senate Resolution 51 recognized the 75th anniversary of the Georgia Tech Research Institute.
■ House Resolution 81 honored Mostafa El-Sayed for receiving the National Medal of Science.
■ House Resolution 85 recognized junior tennis player Amanda McDowell for winning the 2008 NCAA Women's Singles Championship and for her selection as National Player of the Year by the Intercollegiate Tennis Association.
■ House Resolution 86 recognized the Tech band's centennial and Macy's Thanksgiving Day Parade appearance.
■ Senate Resolution 358 commended Management student and USG Outstanding Scholar Marisa K. Acree.
■ Senate Resolution 486 commended Georgia Tech and the College of Architecture for 100 years of architecture education.

In Brief . . .

Under construction

In light of all the campus construction under way, Facilities will maintain a construction impact Web site, updated regularly to include work that impacts foot and vehicle traffic.
www.facilities.gatech.edu/notices.php

USG spring enrollment up

University System of Georgia enrollment for the spring 2009 semester jumped 5.8 percent from last year, signaling an increase of 14,896 students for a total of 272,910 across the system's 35 institutions.

The four research universities—Georgia State University, the Medical College of Georgia, Tech and the University of Georgia—experienced a 4.7 percent, 3.8 percent, 3.6 percent and 2.5 percent increase, respectively.
www.usg.edu/research/students/enroll

Work does pay with tax credit

Making Work Pay, the centerpiece of the American Recovery and Reinvestment Act of 2009, enables an income tax credit through reduced withholding on workers' paychecks for 2009 and 2010. Amounts are $400 for individuals and $800 for married, filing jointly.

The Office of Human Resources wants to remind Tech employees that the tax reduction is based on W4 status. If an individual works two jobs or a spouse works full time, both employers are applying the tax savings.

Adjust the W4 to prevent from being under-withheld. To adjust withholding, log in to TechWorks.
www.techworks.gatech.edu

Community

Rosser takes provost position
Ivan Allen College dean to join faculty of San Francisco State University

Sue Rosser, who has led the Ivan Allen College of Liberal Arts for the past 10 years, has been named provost at San Francisco State University (SFSU) starting this August.

Since July 1999, she has served as dean, holding the Ivan Allen Dean's Chair of Liberal Arts and Technology as well as joint professorships in the School of History, Technology and Society, and the School of Public Policy. She also holds the distinction of being the Institute's first female academic dean.

In leading Ivan Allen College, Rosser brought the academic rigor, depth and scope of the humanities and social sciences to education and research at Georgia Tech, integrating and distinguishing itself in Tech's culture of learning and innovation. Moreover, she built collaborative programs across disciplines in order to expand the Institute's intellectual diversity and produce the kind of graduates needed to address societal issues both at home and abroad.

Sue V. Rosser

With her colleagues, Rosser successfully created three new doctoral programs, three master's programs and four bachelor's programs. She hired 75 percent of the College's tenure-track faculty and doubled student enrollment. According to Provost and Executive Vice President for Academic Affairs Gary Schuster, her legacy at Tech will reflect this marked progression.

"When Dean Rosser assumed her leadership role, there was not a clear understanding of how the College fit in with the rest of the academic units," Schuster said. "Under her direction, Ivan Allen College has achieved not only an identity and focus but also established itself as a leader in scholarship at the intersection of technology and the humanities. By every measure—enrollment, sponsored research and national profile—she has advanced liberal arts at Tech."

"Working with the school chairs and faculty in Ivan Allen, as well as colleagues in other units across Georgia Tech, has allowed Ivan Allen College to build wonderful programs at both the graduate and undergraduate levels," Rosser said. "I will miss the wonderful sense of collegiality and interdisciplinarity that permeates Tech and makes it such an exciting environment."

With approximately 30,000 students and more than 3,500 faculty and staff San Francisco State is among the largest campuses in the California State University system. As provost, Rosser will serve as the university's chief academic officer, with responsibility for the formulation and implementation of academic plans, policies and priorities, as well as the allocation of budgetary resources.

"I'm very excited about SFSU and the new opportunities it provides to experience the San Francisco State of Mind," Rosser said. "Its emphasis on diversity and social responsibility as a public urban university stands as values that resonate particularly with me."

Rosser received her bachelor's, master's and doctoral degrees in zoology from the University of Wisconsin-Madison. She has edited collections and written approximately 120 journal articles and 11 books on the theoretical and applied problems of women, science, and technology and women's health.

The Provost's Office will move immediately to identify and appoint an interim dean as well as initiate the search for Dean Rosser's successor.

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program in CEE is funded by an endowment created by graduate Joseph Mundy.

In 1987 while earning her doctoral degree from Emory University, Rosenstein took a position at Tech in what is now the School of Language, Communication and Culture (LCC). "It was the first year of the [Marion L.] Brittain Postdoctoral Fellowship Program," she said. "As Brittain Fellows on the quarter system we taught a lot—nine to 12 classes per year. I saw quickly what skills Tech students needed but lacked and then figured out the most effective way to teach them."

After her Fellowship ended, Rosenstein left to start a family, but kept in touch with her contacts at Tech, handling occasional contract work.

Her current position opened at a perfect time, she says, for both her and the Institute. "LCC had started limiting their technical writing classes, but the need for this instruction was still great. I had the knowledge and experience, I was a known quantity, and I was ready to go back to work" she said. "I was perfectly positioned to take this job."

Her job consists mostly of teaching, both classes and workshops. In working with engineering students, Rosenstein understands that a lack of inclination toward a subject can lead to a lack of confidence. "In the same way that math is really difficult for me, I understand that writing can be really difficult for someone else. I try to show students that there are certain objective criteria that writing has to meet and there are strategies for meeting them."

One of the biggest hurdles for Rosenstein is getting her students to appreciate the importance of having excellent engineering communication skills.

"I always remind my students that often they will be judged on their engineering expertise as presented on paper. If they can't write an effective proposal, they won't get the funding to do their research."

And although she may never have written a National Science Foundation proposal, she says the skills to instruct how to do so are completely transferable. "Because my training is in English, I know not only how to write clear and direct prose, I also know how to teach others to write that way."

Although Rosenstein's focus is changing engineering students' writing abilities, it has changed her for the better as well. "I've gotten a lot in return—an education for starters," she said. "I used to really only care for literature and the arts.

"Now, my perspective is wider."

And what she unexpectedly enjoys above all is the engineering environment. "The level of creativity in engineering is mind-boggling for me. It inspires me to do the best and most creative work I can."

Improving communications

Jeffrey A. Donnell
Woodruff School of Mechanical Engineering
Coordinator, Frank K. Webb Program in Professional Communication

Hired for the ME position in 1990, Donnell started as one of the inaugural Brittain Fellows—along with Lisa Rosenstein—in 1987.

He is a co-instructor for undergraduate and graduate classes, overseeing student documentation when faculty members assign projects. "I'll oversee how the students prepare reports and presentations [based on the faculty assignment]," Donnell said. "Much of what I do in classes involve project support. I oversee the teaching assistants rather than the individual students."

He works mostly with the sophomore design course and the junior-level experimental methodology lab. For graduate students, he teaches a lecture class, co-teaches a teaching practicum and reviews manuscripts upon request.

On teaching engineering students, Donnell says he was surprised at their attention to accuracy. "They are quite keen to write well," he said. "They have to be very specific, and they use language very aggressively, which I didn't understand before I came here."

He also works with faculty members, if time permits, saying he considers "being an excellent colleague" as part of the job description.

Christina Bourgeois
Electrical and Computer Engineering
Director, Undergraduate Professional Communication Program and Coleman Family Professional Studio

Bourgeois says that ECE begins integrating a formal communications component at the sophomore level, which then extends into two junior-level courses and culminates in senior design. "The four courses are required," she said.

Unlike Rosenstein, she does not teach a standalone course, instead participating as a co-instructor. In creating a writing assignment, Bourgeois said she collaborates with the engineering instructor and faculty. "We use documents engineers are required to write in the workplace as the context for the class," she said. "[Students learn] to write like engineers and in turn the writing reinforces course content."

ECE is unique in that it offers students the use of a communications studio, open more than 40 hours a week. In addition to communications help, the studio staff members also offer workshops on career planning, including practice interviews and how to write résumés and cover letters.

Other communications officers in the College of Engineering include Judith Norback, director of Workplace and Academic Communication in the School of Industrial and Systems Engineering, and Jacqueline Mohalley Snedeker, director of the Technical Communications Program in the School of Chemical and Biomolecular Engineering.