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THE WHISTLE

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Extending our reach: Technology Square breaks ground

Former 'Fifth Street Project' begins six years after conception

Catherine Reynolds
Institute Communications and Public Affairs

Final designs for the multi-building complex at Technology Square have been drafted and the official groundbreaking was September 6. Educational, civic and governmental leaders gathered along Fifth Street at the site that will create nine new buildings and facilities and reunite the Institute with the Midtown high-tech district.

Technology Square has already made headlines in Atlanta when it was recognized as the Best Mixed Use Project earlier this year by the Atlanta Business Chronicle.

The current building for the DuPree College of Management has approximately 50,000 square feet, but there have been substantial increases in undergraduate applications. Now, the College is getting ready to grow with the addition of many new faculty through the energetic leadership of Dean Terry Blum. DuPree is moving up in the rankings — Business Week ranked the College in the top tier, up from the third tier (11th among public universities), and U.S. News and World Report listed it as number 35, up from 42, overall. By the time the College begins classes in the new facility in 2003, there will be an estimated $5 million in executive education programs, 60 or more faculty, and a strengthened bond with the high-tech business community.

Continuing Education efforts will greatly expand with the new facility, bringing a new world of lifelong learning opportunities for both alumni and

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Moving in the foreground from left to right along West Peachtree Street, the rendering shows the plans for both the Interdisciplinary Center connected with the new DuPree College of Management and bookstore. Moving down Fifth Street and toward campus will be the hotel, retail space, a conference center and the Global Learning Center. The remaining structure is the parking deck, expected to hold more than 1,500 cars. Construction of the $180-million project is scheduled to be completed by October 2003. Progress may be charted at www.gatech.edu/techsquare.

Looking for ways to promote undergraduate research

photo by Stanley Leary

Christina Baker, an undergraduate chemistry student, works on an experiment under the supervision of Assistant Professor Andrew Lyon. Getting students in the lab is a high priority for the Institute.

Inside the 'messy, ambiguous process of discovery'

Richard Hermes
Institute Communications and Public Affairs

When Christyn Magill sent a mass e-mail to Tech professors about her desire to work on a research project, she wasn't sure what to expect. A former architecture major, she'd recently changed to mechanical engineering — the field of engineering that, she thought, would best incorporate her passion for design. After an "extremely tough" fall 2000 in the engineering curriculum, Magill hoped some time in a lab would provide "some reassurance that this new field was something I really wanted to pursue." After all, she said, "That's what college is all about — trying to find out what area you're interested in so you can make a career that you enjoy."

Several professors responded to her query, and she chose to work with Marc Levenston, assistant professor of mechanical engineering. Her task: starting from scratch, design, build, and conduct experiments on a machine that mimics a joint, to study replacement tissues for articular cartilage. To support the work, Magill applied for grants from the Undergraduate Research Internship Program (URIP) in Tech's graduate studies office, and from the Office of the President, which made $250,000 available this year in an effort to encourage undergraduate research throughout campus.

Next month, at the annual meeting of the Biomedical Engineering Society in Durham, N.C., Magill will stand in front of a group of academics and professionals — where she will likely be the youngest in the room — and present the results of her work.

"I'd be surprised if there were more than a few undergraduates presenting at that meeting," Levenston said.

"The first thing I thought was, 'Oh my gosh, I can't do that,'" Magill said. Those feelings of nervousness quickly subsided, and now she's looking forward to it, and to continuing her research. She plans to apply for more funding, and she credits the support from the president's office with "making it possible to take the research farther than I otherwise would have."

Numbers tell the story

According to the 2000 National Survey of Student Engagement, large American research universities perform poorly as a group when it comes to student-faculty interaction. Surprisingly, that includes time in the lab. The survey revealed that 53 percent of freshmen and 35 percent of seniors at large research universities "never" discussed academic ideas with a faculty member outside the classroom. While those large universities would be expected to "lead the pack" when it comes to undergraduate research because of their

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"QUOTE–UNQUOTE"

"Architects have all this great talent and intellectual energy, yet they've left the design of suburbia to the builders who do the big subdivisions and office parks. I want to bridge the gap between the hypothetical world of architectural theory and the world of money and development and taxes and regulation."
—Ellen Dunham-Jones, director of the architecture program, on her dedication to the philosophy of new urbanism, which favors mixed-use, mixed-income, higher density neighborhoods with easy access to commuter mass transit.
(Georgia Trend)

"Unfortunately, although India has produced such a huge pool of talented IT professionals, a majority of these skilled individuals have contributed only to the U.S. economy. The [Indian] government should employ talented people to save millions of dollars given to foreign consultancy companies."
—Shamkant Navathe, professor in the College of Computing, lamenting his native country's "brain drain," impacting its ability to manage the planning of its natural and human resources.
(Times of India)

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Information security 101: keeping systems safe

Education and awareness key to preventing data loss and system failures

Theresa Harvard Johnson
Office of Information Technology

By now, everyone has heard about the Code Red Worm, a malicious computer bug created to upset computers running Microsoft operating systems. Before the bug was first identified in mid-July, it had infected thousands of systems globally within a couple of hours. Last year, the infamous "Melissa" and "I Love You" viruses propagated a similar attack, further heightening concerns about the safety of computer networks.

"You can purchase the best software, follow all the protocols, have top information security procedures in place, and have a wealth of knowledge concerning computer worms, viruses, and Trojans," said Brian Culver, technical project director for OIT Information Security. "But there are people out there who are developing better worms and stronger viruses every day with malicious intent. There's no way to guarantee security for your system, but there are ways to increase your system's security – and the starting point is education and awareness."

Every bug that attacks computer systems isn't a virus, he said. There are three basic classifications: worms, viruses, and Trojans.

"A worm – like Code Red – is a malicious application created to exploit programming flaws in your computers' operating system," Culver said. "In this case it targets Microsoft operating systems like Windows NT, 98, and 2000 through Web servers. It literally finds a chip or flaw in your application, and sets out to crash it. Worms are self-activating or self-installed programs. You don't have to do anything to launch them because they launch themselves."

Once unleashed, worms operate like searchlights on a network, multiplying and scanning system after system for vulnerabilities. When it finds one, the worm begins a concentrated, specific attack on that system and spreads quickly to other machines sharing the network.

Worms are often date stamped, attacking only during certain periods of time as set by the programmer. Then they rest for a short period and begin spreading again. As a result of successful infections, the worm's creator — or anyone else with how-to knowledge — can gain access to files stored on the infected machines, stealing information for personal or public use.

Viruses operate differently.

"You don't have to do anything to cause a worm to attack your system. Viruses, on the other hand, must be activated," Culver said. "They are usually sent as attachments to e-mail or transferred from one system to the next by sharing infected media."

To put it differently, a virus relies on the inexperience of the people who use computers.

"A user must either open an e-mail, or open a file to compromise a system," he said. "At that point, depending on the virus, a system could be slowed down tremendously or the virus could go through it, wipe out its hard drive, multiply, and send itself to others through your address book or on your network."

The term Trojan refers to another form of malicious code that is actually written to look like a helpful, executable program. It appears to do something useful or entertaining – like starting a game or screensaver, but in reality it's in the background destroying files or creating entryways for others to gain access to your system.

"Unlike worms and viruses, it does not self-replicate or send itself from one machine to the other," said Culver. "It most often travels with help from the user, who may send the attachment to someone in his or her e-mail address book or share infected media."

To limit the threat to campus computers, Culver said, everyone should have virus software installed on their systems. OIT's Web site offers MacAfee Virus scan for free download to the Georgia Tech community, and the software automatically updates as needed. If there's a virus on your system, the software will detect and remove it. If you suspect your system has been compromised, contact the OIT Customer Support Center.

Protect yourself: A few steps to keep the bugs at bay

- **Back up your computer data.**
  A little prevention can avoid a ton of headaches.

- **Use common sense.**
  If somebody you know sends you a message out of the blue that says they love you, maybe you should be suspicious of it.

- **Show file name extensions.**
  Specifically, watch for files with .VBS or .VBE at the end of the file name. Go into Windows Explorer, click View, Folder Options, and click the View tab. Uncheck the box marked "Hide file extensions for known file types."

- **Never open or run files attached to messages unless you know for a fact that the file is clean.**
  If you get a message from your sister and it says, "Here are pictures of our party," you're probably not going to get a virus. But if you get a message from the guy down the hall that says "A real friend sent this message to you," use common sense. Don't run it, don't open it, just delete it. There's no such thing as a 'trusted source.' Users should be wary of e-mail from people they don't know, but the more recent viruses are sent via addresses from the Outlook Contacts list, so an infected attachment is very likely to come from someone you do know.

- **If you use Outlook, make sure you do save and not directly open an attachment.**
  Microsoft has an add-on called the E-mail Attachment Security Update. All the 'Security Update' does is force you to save to disk certain types of files that are more likely to carry viruses. You can get the update for Outlook 97, 98 or 2000.

- **Run current antivirus software to detect and remove viruses.**

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business people near and far. Perfectly positioned between the worlds of business and education, the Global Learning Center will be a hub for distance learning and continuing education.

Tech's interdisciplinary centers are sharing innovation with the world through the incubation of new high-tech companies. The Economic Development Institute, the Center for Quality Growth and Regional Development, and the Interdisciplinary Institute are all growing and will be the birthplace of many breakthroughs in the near future. Tech's outreach role, it is hoped, will be demonstrated through the support of these innovations.

Rounding out Technology Square's functionality are a hotel and conference center, the Georgia Tech Bookstore, light retail and restaurants, and parking.

Gov. Roy Barnes said, "Our economy is changing from one where the currency was dollars and cents to one in which knowledge, information, and speed are the currency."

Georgia Tech and Technology Square are important to this transition, he said. "If you don't have the trained and educated work force that comes from higher standards, better education, and more current skills, then you won't be able to go any further. Georgia Tech plays a very crucial role in creating the much-needed new human capital for this economy that is emerging. Technology Square has the potential to become the nerve center, the very center of the technology universe that exists in Georgia."

Strike up the band

photo by Stanley Leary

In the hours leading up to each home football game, Tech fans gathering outside the stadium are treated to a traditional pregame parade. Due to construction along Fowler Street, the marching band began at the library, moving down Bobby Dodd Way and into the stadium for the September 1 game against the Citadel.

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exceptional resources, only 17 percent of their freshmen worked with professors on research — the lowest among the various types of colleges surveyed.

"It's possible to go through Georgia Tech and most colleges viewing education as passively receiving a body of knowledge," says Bob McMath, vice provost for undergraduate studies and academic affairs.

"Undergraduate research shows students that the process of discovery is messy and ambiguous, and that there's not one right answer in the back of the book," McMath said. Last year President Clough made undergraduate research a priority in his State of the Institute address, announcing the $250,000 fund. Next year, the Georgia Tech Research Corporation will pick up the tab.

McMath says that in less than a year since the president's initiative was announced, Tech has already learned a lot about undergraduate research on campus. "We underestimated how much was already happening," he said. In the 2000-2001 academic year, 961 undergraduates, or approximately 9 percent of the student body, signed up for 1,182 research, independent study, or internship courses for credit, and that doesn't include students who work for pay. Based on data from the National Survey of Student Engagement, Georgia Tech estimates that 28 percent — or 3,000 — of its undergraduates have some research experience by the time they graduate. The Institute's strategic plan calls for that number to increase to 50 percent.

"That's a very ambitious goal," McMath said, "but it's a target that I believe we can meet in three to five years."

At the same time, however, administrators believe that more needs to be done to connect students and professors in the lab. For instance, far fewer students than expected took advantage of the president's new research fund; out of $250,000, only about $60,000 was awarded. Those numbers may represent the inherent difficulties in changing the culture of a large institution, but for McMath, they also expose a need — not for funding, lab space or research opportunities, but for communication and coordination of what's already available. "The trick is to be strategic, to put the money where it is needed," he said.

Toward that end, some of next year's research funds will go to a Web site that will serve as a central clearinghouse of information about opportunities in undergraduate research that will encompass all programs on campus. In addition, Tech plans to hire two full-time academic professionals to coordinate undergraduate research efforts and assist with undergraduate advising.

"Hopefully, fewer students will have to use mass e-mails to connect with professors the way I did," Magill said.

Global reputation brings international students

International students make up approximately 40 percent of graduate students and 50 percent of doctoral students at Georgia Tech, according to Tech's Office of International Education (OIE).

The overall number of international students increased in the fall by 361 over last year to a total of 2,482, said Harvey Charles, director of OIE. About 85 percent of that number are graduate and doctoral students, versus 15 percent undergraduate.

"Over the last four years, there has been a precipitous increase in the number of international students coming to Tech compared to the past 20 years," Charles said. "I think this is because Tech's prestige has increased and because the emphasis has been on making the Institute a world-class institution in terms of research and teaching."

The top 10 countries sending students to Tech are India, 494; China, 389; South Korea, 339; France, 183; Turkey, 93; Thailand, 72; Taiwan, 65; Pakistan, 46; Germany, 45; and Indonesia, 34.

IN BRIEF:

Campus construction update

The State Street Improvements project will involve the installation of underground utilities outside of the existing construction fence limits. From September 10-23, Ferst Drive will be impacted. New underground utilities will extend across Ferst Drive near the intersection with State Street. The contractor will work on half of the street at a time in order to keep one lane of traffic open at all times (at this intersection only), and access to the parking areas on the south side of this intersection will remain open during this period. Workers will regulate two-way traffic during construction hours (typically 7:30 a.m. - 6:30 p.m.). Steel plates will be installed over the street each evening in order to allow two-way traffic after construction hours.

Avoiding this intersection as much as possible during this time period is recommended. Additionally, a new pedestrian crosswalk has been created across Ferst Drive at the corner of Dalney Street. Facilities requests that pedestrians use this crosswalk area in order to safely cross the street.

Averting a "creeping disaster"

Georgia Tech researchers are working with state officials to proactively deal with drought, "the creeping disaster" that occurs when water demand exceeds supply. Examining indicators and impacts of drought and formulating appropriate responses to it will form the basis for a plan that will first address the problem at the state level, then at the regional and local levels. The plans will be linked to make drought management consistent, but still reflect local conditions.

Although the state already requires water purveyors to develop drought management plans, Georgia Tech research has found that few are actually implemented or effective. The new plan will provide guidance to agencies and boards that manage water as well as to individuals and businesses that use it. Implementation of the plan by the state Environmental Protection Division could begin later this year.

Building Construction program gets boost

Facility Information Systems, Inc. (FIS), a facility management software developer based in Camarillo, Ca., recently announced it will provide state-of-the-art facility and property management software valued at $100,000 to the College of Architecture's new Building Construction and Integrated Facility Management Graduate Program, part of the Building Construction program.

"Students will not only study the theories behind facility and property management, but they'll be able to apply various situations and ideas to this software and help move the industry toward a fully integrated approach," said Roozbeh Kangari, director of the program.

Courses in the Building Construction and Integrated Facility Management program cover topics ranging from strategic planning and benchmarking to environmental issues and financial management of real estate assets. The program's real estate courses are taught by professors from the Georgia State University Real Estate Program. The program began in the fall of 2000, and the first graduates are expected to complete their theses by this December.

Tech alum gets special mission

The Naval Academy in Annapolis has a tradition before each home game: several Navy pilots buzz the stadium in jet fighters. Last week's game against Tech had special meaning for one of those pilots, Capt. John F. Carson Jr., who is a Marine, received both his bachelor's and master's degrees at Tech's School of Aerospace Engineering. Carson is the nephew of Assistant Registrar Candy Carson.