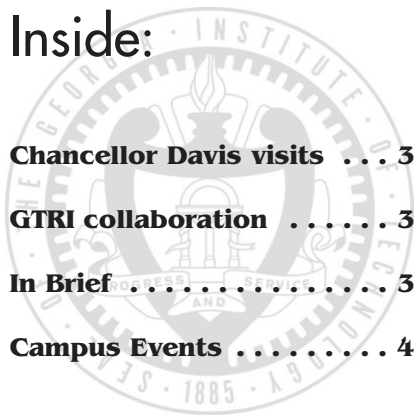


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THE WHISTLE

FACULTY/STAFF NEWSPAPER

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THE GEORGIA INSTITUTE OF TECHNOLOGY

2006 Spring Commencement



photos by Rob Feit

The Whistle congratulates Abraham Lapscher (above), Kristie Fisher and the more than 2,100 students who received degrees at Georgia Tech's 224th Commencement.

Big questions about rebuilding New Orleans

Kimberly Link-Wills
Alumni Association

Joseph Hughes chairs the School of Civil and Environmental Engineering at Georgia Tech and serves on the U.S. Environmental Protection Agency's environmental engineering advisory committee. He toured the hurricane-ravaged Gulf Coast with President Wayne Clough in November, and now is helping coordinate a conference that will address the future of New Orleans.

What is Georgia Tech's role in the rebuilding of New Orleans?

We're at the stage right now in the discussion where there are real questions about whether we should rebuild or what we should rebuild. Clearly, the city will be forever changed. We were brought in initially — President Clough, myself and others — to engage in a discussion from the civil engineering perspective. What we realized is this is a problem that goes far beyond infrastructure. We've got members of the faculty

who are much more engaged than I am. We've got a growing number of projects that our faculty are supporting. Coastal disasters are something that Georgia needs to worry about — a storm like Katrina could just as easily hit Savannah.

How will you proceed?

A proposal has been funded from the United Engineering Foundation for Georgia Tech and our partner universities — Tulane University, the University of New Orleans and Louisiana State University — and in partnership with the American Society of Civil Engineers to have a forum on the subject of rebuilding New Orleans. Our goal is to look forward and not to look to the past and really explore what it would mean to protect New Orleans and the region.

We're proposing to do a scenario analysis that would allow us to consider anything from doing nothing to building the most incredible infrastructure project the United States has ever seen. What I think most people believe is that it will be

somewhere in the middle.

Will the forum address issues outside engineering?

The human component of this is extremely important. We could build anything hypothetically, but what we really want to do is build things for the people who will benefit from them. What is it that's going to get people, particularly businesses, to re-establish operations?

We are not the only people who are trying to do this. But we do think we're taking a unique approach to it and have the capacity to make some contributions.

What kinds of contributions?

There will probably be various types of documents to come from it, but we're trying to use an innovative way to disseminate our information. It's going to be Web based ... something that's going to be available globally. We have the potential to develop a warehouse of usable information.

Q&A continued, page 2

Homeland Security drill planned for May 18

Testing disaster response capabilities

Michael Hagearty
Institute Communications
and Public Affairs

The Georgia Tech Police Department will stage a disaster response drill next week, testing its emergency response procedures and communications systems.

The two-hour event, scheduled to begin the morning of May 18, will involve several different scenarios, clustered around the intersection of Hemphill Avenue and Ferst Drive.

Faculty or staff will not be inconvenienced as a result of this drill. However, since the drill will involve emergency vehicles and first responders, organizers are alerting the

Drill continued, page 2



"One criticism of biofuels is that if you want to go from 2 percent to 20 percent, you would have to direct so much of that agriculture from food to fuel that there would be real competition between the two. Even worse, if we have a famine in part of the world, we would have to make a decision as a society between food or fuel."
 —Arthur Ragauskas, an associate professor in the School of Chemistry and Biochemistry, on the potential for controversy when business and governments begin to produce bio-fuel as an alternative to petroleum. (Associated Press)

Q&A, cont'd from page 1

What this will do, and I think it's going to be very timely, is provide information from world-class experts that will be usable by the Army Corps of Engineers, the National Academy of Engineering — usable by a range of groups that have some role to play in this.

One other thing that we put in the proposal that I think is very important is that we want to think of it from an educational perspective.

What can we draw from this event that will be useful in engineering education?

It's an example of how we as a society have managed risk. In this case, this was an interesting and long story of risk management.

A 2001 article in Scientific American gave a whole slew of reasons why New Orleans was a disaster waiting to happen. Wasn't the risk of living there widely understood?

In California they have this saying about "the big one." But in recognition of that, the way they build things in California is strongly influenced. New Orleans is different. There was the recognition that the city is below sea level in a hurricane-prone region. Fundamentally, the people who were living there put all their possessions in the security of the levees.

Why did the levees fail?

There were three major levee failures in the city. They all failed before overtopping. In one case the levee was literally just pushed away. It appears as though it wasn't built correctly. In another case the levee actually sank. The water had gone underneath it and pushed the foundation out, and it just went down. There had been a lot of construction very close to the levees from residential and commercial development. A number were heavily planted with trees, things that can affect the structural integrity of the levee.

What about the problems of debris?

The amount of solid waste is almost immeasurable. When we flew over New Orleans I saw between 40,000 and 50,000 refrigerators that had been moved out of homes and were just sitting side by side. That's just one example of the unbelievable

solid waste problem. There has never been a bigger solid waste problem in the United States.

You can think of many of the homes as just a big pile of debris. Over 108,000 houses took on more than four feet of water, all within New Orleans. That's greater than 50 percent of the houses in New Orleans.

What about public health issues?

I think the public health issues are going to start to grow. The city is rotting. It's a city that's prone to decay. It's very warm, it's very moist and requires a lot of upkeep. There are real concerns about the contamination of everything that came in contact with floodwaters with regard to pathogens, agents that can cause disease.

How is work progressing on the rebuilding of the levees?

The goal is that by the beginning of hurricane season June 1 the existing levee system will be at the pre-Katrina level — no improvements. That's not the stated goal. The goal is to just try to get back to where they were.

I don't think we'll see the full levee system at the pre-Katrina level before the beginning of the hurricane season, but the levees that failed within the city of New Orleans proper, the ones that caused the most flood damage that affected the citizens of New Orleans, those do fall under the jurisdiction of the Army Corps of Engineers, and those are the ones that the focus is on.

What about longer term?

The Army Corps was tasked immediately to restore the levees to the pre-Katrina status. That was considered emergency response. That wasn't visionary thinking. Now we're in a very different stage. We're starting to say, "If that's all that's done, if we don't expand that level of protection any greater than that, what does that mean for the future of the city? Will people come back to a city that's safe for a category 2 when they know the big one's coming?"

Has New Orleans as we knew it disappeared?

It's never going to be the same. Historically we've seen that. When Galveston got destroyed (by a hurricane in September 1900), Houston was born. Galveston has

never come back. It was the largest port on the Gulf Coast. There's a shipyard there now, but it's mainly for repairing ships. Certainly a lot of New Orleans has moved to Houston. Baton Rouge doubled in population (after Katrina) and there's still no occupancy anywhere in Baton Rouge. The future of New Orleans may be Baton Rouge.

Should New Orleans be rebuilt?

At this stage, I would say it's not a place where I would feel safe moving my family. There will be a city there. There are people who are willing to take that risk, and there is an economic infrastructure such as the port and the French Quarter. It's a place where there's a level of risk that will cause many people to say, "I'm not going to put my investments there." That level of risk for at least the near term, until memory fades, is going to keep a lot of businesses away.

Can New Orleans look to Amsterdam as a model?

Amsterdam underwent a very significant flood in 1953. A tremendous effort was initiated right away to try to protect Amsterdam in the future — massive infrastructure construction projects. The first step was to construct a moveable storm surge barrier. That went into operation in 1958. The Delta Project was not completed per its original design until 1997.

How long could it take to rebuild New Orleans?

We can build things that would protect New Orleans in the future. I will probably be long since retired before they're done. So we've got a period of 30-ish years, even if we're aggressive, that it's not protected. That raises real questions about the future of the city.

Natural disasters tend to accelerate the rate of change. New Orleans is a city that was economically challenged before; the population has been dropping since 1965. No Fortune 500 company is headquartered in New Orleans.

Would you move your family there? Would you move your company there if I told you realistically it may be 20 to 30 years before the city is protected? Yes, we can rebuild. But have you built it for anyone who wants to be there?

Drill, cont'd from page 1

campus of the planned event in order to allay any concerns among those who will be in that area.

The main objective will be not only to test Georgia Tech Police Department procedures in the field, but also to test the technology critical to responding to a disaster. Over the course of the exercise, participants will conduct a series of tasks designed to show solutions proposed for emergency communications response.

The demonstration is intended to test the techniques and technologies that support emergency response in an urban setting. The breadth of the exercise will run the gamut from the conventional, such as responding to a chemical spill, to more atypical events, such as relocating an emergency operations center while maintaining communications control.

For more information...
Georgia Tech Police Department
www.police.gatech.edu

What:	Disaster response drill
Where:	Georgia Tech Police Department, along Hemphill Avenue
When:	May 18 9:30 - 11:30 a.m.
Why:	To test emergency preparedness and communications operation



THE WHISTLE

Editor: Michael Hagearty

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Georgia Tech is a unit of the University System of Georgia.

University System chancellor makes first campus visit

University System of Georgia Chancellor Erroll Davis paid his first official visit to Georgia Tech last week. Over the course of the day, he was introduced to members of the administration, faculty and alumni, while touring many of Tech's facilities.

Since his appointment in February, he has been traveling to each campus within the 35-member System. Davis said he was very impressed with Tech's level of commitment to the training and development of its people, which he called "a model for the rest of the System."

Davis also stated his intention to continue visiting System institutions during his tenure, in an effort to better understand how USG policies are being implemented.



GTRI to collaborate on new law enforcement vehicle

John Toon
Research News and Publications

Officials from Georgia Tech and Carbon Motors Corporation — a new U.S. automaker that has announced plans to locate in Georgia — have taken the first step toward a collaboration that would develop the world's first vehicle built expressly for law enforcement agencies.

The company, which will market its innovative "purpose-built" vehicle directly to customers, also plans to revolutionize U.S. automobile manufacturing as a lean and integrated organization. Last month, officials from Georgia Tech and Carbon Motors signed a memorandum of understanding setting out their intent to establish research, education and financial arrangements.

"In this era of enhanced homeland security concerns, law enforcement first responders require the most appropriate specialized equipment delivered to them in the most efficient way possible so our women and men in uniform can patrol our communities in a more effective and safe manner," said William Santana Li, chairman and CEO of Carbon Motors.

To make that vision a reality, Carbon Motors plans to take advantage of Georgia Tech's expertise in a broad range of areas. Initially, the company's designers and engineers plan to tap Georgia Tech's expertise in the ergonomic design of aircraft cockpits and the integration of highly complex electronic and electrical systems.

"Police vehicles today have a complex set of systems that need to be ergonomically configured to ensure proper flow of information to officers, especially when they are in pursuit or in stressful situations," said Li. "What we essentially need is comparable to the cockpit of a helicopter — which Georgia Tech has experience in designing. That is expertise not normally found in the automotive industry."

Beyond the human factors interface expertise, the company also intends to take advantage of Georgia Tech experience with integrating complex electronic systems — expertise also developed in decades of work done for military agencies.

"The amount of electronic and electrical equipment that will be in this vehicle is an order of magnitude beyond what you'd find in any existing automobile," Li noted.

The Georgia Tech Research Institute (GTRI)



Computer-aided industrial design model representation of planned law enforcement vehicle

plans to work with Carbon Motors on those key tasks.

"Large-scale systems engineering is an area where GTRI has a proven track record of success," said GTRI Director Stephen Cross. "We recently designed and built a concept military fighting vehicle to keep soldiers safer on the battlefield. We look forward to working with Carbon Motors to develop new vehicles that will make first responders safer on the streets."

Beyond human factors and systems integration, the company is also exploring Georgia Tech's expertise in other areas, including materials selection, logistics, information technology, manufacturing product life cycle management, sensor technology, aerodynamics, decision making algorithms and process engineering.

"This project is a prime example of how forward-thinking companies like Carbon Motors can collaborate with Georgia Tech to bring innovative products to the market and to transform a vital sector of the U.S. economy," said Wayne Hodges, vice provost in the Georgia Tech Office of Economic Development and Technology Ventures.

For Georgia Tech, the collaboration will not only provide an opportunity to impact industry and help create jobs in Georgia, but it will also give students an opportunity to work on real-world projects, Hodges noted.

Based on two years of market research, Carbon Motors identified what law enforcement agencies needed in a vehicle built expressly for their use. Current police vehicles are based on retail passenger vehicles that are modified by a highly fragmented set of local suppliers with little standardization or integration.

Among the improvements will be significantly enhanced total vehicle performance, improved fuel economy, enhanced safety and a reduction in total costs.

IN BRIEF:

Prototype for eyeglasses with a switchable focus developed

Optical scientists at the University of Arizona and Georgia Tech have developed new switchable, flat, liquid crystal diffractive lenses that can adaptively change their focusing power.

"Right now, in our prototype, you switch the lenses on or off to change focus," said Nasser Peyghambarian, chair of photonics and lasers in Arizona's College of Optical Sciences. "But ultimately this will act just like your automatic camera: eyeglass lenses will know where to focus just like your auto-focusing camera does."

"It's great to see our new concept materialize and be validated after all these years of continuous efforts," said Bernard Kippelen. Kippelen, who helped start the project when he was at the UA, is now a professor of electrical and computer engineering and associate director of the Center for Organic Photonics and Electronics at Georgia Tech.

Former Tech co-op director honored as pioneer

The late James Wohlford, former director of Georgia Tech's co-op program, was named to the Cooperative Education Hall of Honor at the University of Cincinnati last month. Wohlford was one of seven co-op pioneers honored at UC's Centennial Celebration of Co-op. His name will be engraved into a monument in a planned garden at UC honoring the cooperative education. UC began the country's first cooperative education program in 1906.

Wohlford served as director of Tech's program for more than 30 years. He graduated from Tech in 1941 with a degree in electrical engineering. After serving in the army, Wohlford returned to Tech in 1947 to teach. The next year, he became acting director of the Co-Op Division and was named director in 1951. He retired from Tech in 1981 and was named director emeritus of Tech's Co-op Division. He died in 2000.

CEISM Gazette gives students a window into STEM careers

Through its more than 20 programs, Georgia Tech's Center for Education Integrating Science, Mathematics and Computing works with teachers and school districts to improve awareness and instruction of math, science and technology in K-12 classrooms and excite students about the disciplines.

While researching Georgia high schools, CEISM Web author Andrew Kerr found that while some schools do have solid engineering programs, the majority do not. "How do kids even know that they might be interested in exploring the opportunities at Georgia Tech when there's little that they experience in their daily lives that is directly relevant to the research that is conducted here?" he asked.

In February 2005, CEISM launched an online newsletter. Published monthly during the academic year, the CEISM Gazette profiles students, professors, administrators and alumni of Georgia Tech doing exciting and innovative things in math, science and technology.

Many of the articles are accompanied by links to Web sites for more information and even lesson plans for teachers. The Gazette currently has about 1,000 e-mail subscribers, predominately Georgia teachers.

To read the latest issue, visit www.ceismc.gatech.edu/gazette.