Graduate programs a first between the U.S. and Italy

Georgia Tech is partnering with two leading Italian universities, the Politecnico di Torino and the University of Trento, to offer dual master’s degrees in electrical and computer engineering and computer science. The new degrees, which will begin in the fall of 2008, represent the first dual graduate programs in these disciplines between American and Italian universities.

The School of Electrical and Computer Engineering is partnering with the School of Information Technologies at the Politecnico di Torino located in Torino, Italy. The electrical and computer engineering program requires four semesters of course work—two semesters at Tech and two at the Politecnico di Torino. All Tech courses will be taught in English, while lectures and labs at the Politecnico di Torino will be available in both English and Italian.

“Georgia Tech has long worked with key industry partners in Italy,” said Gary S. May, professor and Steve W. Chaddick School Chair in Electrical and Computer Engineering and computer science.

Finalists named in vice provost for DLPE search

The Office of the Provost has announced two finalists for vice provost for Distance Learning and Professional Education (DLPE). The candidates are Civil Environmental Engineering Associate Professor Nelson C. Baker and Electrical and Computer Engineering Professor Monson “Monty” H. Hayes III.

DLPE is a 126-employee organization that enables Tech faculty members to deliver both non-credit and for-credit education programs globally. In fiscal year 2007, DLPE provided more than 1,000 courses and grossed $24 million in revenue. Its four service areas are distance-delivered education, professional/master’s and non-credit professional/executive education, English as a second language education and meeting room rentals in the Georgia Tech Global Learning Center.

Main responsibilities of the vice provost include strategic, fiscal and administrative leadership of DLPE; collaboration with Institute administrators, faculty and staff to better enable dissemination of knowledge to students; and working globally with industry, government and academics to provide global outreach educational programs.

Within these responsibilities, the vice provost will oversee DLPE’s growing educational offerings, ensuring consistency with Tech’s academic excellence and innovative approaches, as well as nurture existing and establish new relationships both on-campus and around the world, to help position the Institute as the “preferred provider” of internationally sought-after educational programs in the public and private sectors.

“I am grateful for the leadership of Jane Ammons as chair of the search committee,” said Gary Schuster, provost and vice president for academic affairs. “They conducted a thorough and thoughtful process and have produced two outstanding candidates.”

Baker, currently associate vice provost for DLPE, is primarily responsible for the oversight of all professional education programs offered by the Institute and for the distance-delivered master’s degree programs. He received his doctoral and master’s degrees from Carnegie Mellon, in 1989 and 1985.

Class takes issues, students out of the classroom

Robert Nesmith Communications & Marketing

At Tech, complicated topics—equations, design challenges, policy issues—are presented to students who then present their solutions. Sometimes these topics are less abstract, and more focused on reality.

Very real examples of utilizing applied solutions exist in the communities surrounding the Institute, brought to the fore in part by the Office of Institute Partnerships.

“We are a revolving door—we bring faculty, staff and students into the local communities and into the (local) schools to help areas undergoing renewal and redevelopment, and we bring community leaders, children and others onto our campus,” said Institute Partnerships Director Andrea Ashmore. “We try to be good neighbors and help Georgia Tech to exhibit civic responsibility,” she said.

One example of this outreach is Tech’s working with Centennial Place Elementary School. The school is currently managing a new technology rollout. “It’s supposed to be the Math, Science and Technology themed school, but they were working with 1998 computers and software,” Ashmore said. A student group—Minorities at the College of Computing (MMCC)—is assisting with the technology update by recommending types of furniture, helping to design the new iMac lab, and integrating the new technology. This project is one of more than 50 outreach initiatives that Institute Partnerships has encouraged Tech to sponsor at Centennial Place Elementary.

“Engaging English Avenue” Program Director and HTS Associate Professor Greg Nobles to tackle another border community. During the “Semester in the City: Engaging English Avenue” class, students learned about the history of and the challenges facing the community due west of campus.

The area, class materials explain, experienced “white flight” in the 1940s. In the 1970s the area became 99 percent African American, and many of the more economically successful moved to the suburbs. The area was then left with numerous rental properties and a significant transient population.
"Accurate to city of Atlanta statistics, English Avenue has been the No. 1 site for heroin distribution, the No. 1 site for AIDS/HIV, the No. 2 site for tuberculosis and the No. 1 site for illegal firearm usage and distribution," said Ashmore, who has worked in the community for seven years prior to the class.

The majority of the 20 Honors class members are from Georgia, with roughly half from the metro-Atlanta area and middle Georgia. Ashmore says it has been an enlightening experience for the students.

"Students have stated, 'I had no idea what was on the other side of Northside Drive,'" she said. "It has been rewarding to open their eyes, and hopefully their projects will help the community."

Several guest speakers have visited the class, including Mayor Shirley Franklin, Fulton County Commission Chair John Eaves, Atlanta Housing Authority COO Joy Wilkins, City Councilman Ivory Young, Atlanta Public School Board Representative Khaatim El and Tech alumna Renay Blumenhal, with the Atlanta Chamber of Commerce.

But information provided to the students does not just stay in the classroom—the students' papers and journals will be given to the mayor and other officials after the end of the semester. In addition, students will complete group projects that detail their ideas for revitalizing and helping English Avenue. The three projects include an informative Web site on area resources for the neighborhood association, the building of a KenoOM playground (possibly at Bethune Elementary School) and a partnership with the Bellwood Boys and Girls Club for Saturday enrichment classes for Bethune and Kennedy Middle School students that teaches video production, culinary arts, computer construction and repair and provides field trips to Atlanta attractions.

Ashmore became aware of Nobles' class structure after auditing one of Nobles' Semesters in the City courses the city councilors, serving on foundation boards for schools, and for five years she was secretary of the English Avenue Neighborhood Organization, "We partnered the clothing drive with employment initiatives," Ashmore said, explaining that professional attire was solicited for the clothing drive. In 2005, Tech helped to sponsor a job fair for 200 people and 35 companies; the next year, 500 people turned out, meeting with 25 companies, and 1.5 residents were hired on the spot.

She has spent time in the communities that are contiguous to campus by helping leaders and non-profits to organize efforts, by participating in the local schools councils, serving on foundation boards for schools, and for five years she was secretary of the English Avenue Neighborhood Association. "In the first few neighborhood meetings I attended, we couldn't vote on projects or make any progress because not enough people were present," she said. Subsequent meetings jumped from seven or eight attendees to more than 40 as a result of a Public Safety Forum in 2005 that she helped to plan for English Avenue.

Consequently, other departments at Tech also have become involved. Sarah Brachmann, assistant director of Student Involvement for Community Service, co-authored a grant with Ashmore to hire three American Vista employees that will be dedicated to assisting outreach efforts in English Avenue. In addition, City and Regional Planning Assistant Professor Harley Eltine instructed a course in which students presented a redevelopment plan for a plot of land in the area.

Ashmore would like to explore other areas in the future, including studying health services in the neighborhood, a subject she says has not been discussed yet. "Based on the students' papers, journals and final projects, they obviously gained insight into the political structure of Atlanta from 1900 forward, and the reasons why English Avenue slid into disrepair," she said. "The thoughtfulness, as well as creativity, in their processing of ideas that led to their final group projects proved that they understood community history, service learning and outreach."

But more than this, Ashmore says she sees classes like these leading to more sustained outreach by the Institute, adding that Nobles, Brachmann and Success Programs Director Steven Giradot are working to expand the number of service-learning classes on campus.

Institute Partnerships is currently working with Home Depot in the six local partnering schools, the corresponding PTAs and four neighborhood associations to provide information about water-saving tips, rebates on low-flow toilets and a gift card for a $10 conservation packet. Ashmore created the Centennial Place Community Stakesholders group seven years ago, which is made up of more than 15 local businesses and nonprofits, in order to assist the community in building capacity and better communicate issues and concerns. Currently the Stakeholders are concentrating on raising awareness of safety issues and encouraging the Atlanta Police Department to resume bike patrols of the area. "When I take on a project, I believe in being as comprehensive as possible," she said. "There are so many ways faculty can direct their students to work in the community," Ashmore said. "You don't just live on your property, you live in a community. By improving the area and the schools around Tech, we make it easier to attract quality faculty members and graduate students."
respectively, and earned his bachelor’s in civil engineering from Tech in 1980.

His research interests center around intelligent learning environ-
ments for engineering, the application of artificial intelli-
gence and learning technologies, and computer-
based techniques for problem-
solving and finding robotic ap-
plications to civil engineering, as well as the study of design
processes. In working with stu-
dents, Baker’s activities have
included the creation of multi-
lingual, Web-based intelligent simulators for problem solving, intelligent tutors, student mod-
els, virtual reality interfaces for education and medical assis-
tants for physicians.

Some of Baker’s honors include
Outstanding Faculty
Member Award from the Tech
student chapter of the American
Society of Civil Engineers both
in 1989-90 and 1993-94, the

75th Young Investigator award
from 1992-98, the ASCE
Journal of Computing Best
Paper in 1990, and Tech’s
Outstanding Innovative Use
of Education Technology Award
for 1997.

Hayes has been associate
chair for ECE Programs at
Georgia Tech-Savannah since
2004. He joined the faculty in
1981 after receiving his mas-
ter’s and doctorate in electrical
engineering from the Massa-
chusetts Institute of Technology
(1978 and 1981). He received
his bachelor’s in physics in
1971, and worked as a systems
engineer in infrared imaging sys-
tems with Aerojet Electro

His research interests include
digital signal processing, image
and video processing, face recog-
nition, adaptive signal processing
and engineering education. He is
internationally recognized for his
contributions to several of these
subjects, is the author of two

many scientific areas by CENSIS, a social study
and research institute. Trento is an autonomous
province of Italy and invests heavily in research
and education, as evidenced by the Microsoft
Research lab for Bio-Informatics, which is partially
funded by the region.

"In collaboration with our colleagues in
Electrical and Computer Engineering, we have
developed a significant research relationship
with University of Trento and the
Politecnico di Torino that we antici-
pate expanding to other top-rated
universities in Italy including the
Politecnico di Milano," said Michael
McCracken, program director for
the dual degrees in Computer
Science and assistant dean of the
College of Computing.

"Not only will students have the
opportunity to complete two gradu-
ate degrees in two years, but they
will also have the possibility of
obtaining an internship with a
multi-national firm in Italy as well
as academic support," said
Anthony Yezzi, program director for
the new dual degrees. "Students can obtain

two degrees in considerably less
time than pursuing
them individually, as well as
jumpstart their career in the

global market."

—Anthony Yezzi
ECE associate professor and
program director for the
new dual degrees in
Computer Engineering. "This new affiliation will
afford students the opportunity to experience com-
petitive, and cutting-edge approaches to engi-
nering solutions in a cross-cultural environment."

"The dual master’s degree program brings
together the resources of top-ranked research
universities," said Francesco Profumo,
rector of the Politecnico di Torino.

"What better way for students to pro-
don? This valuable experience will not
only allow students to gain
important contribu-
tions in the world marketplace
than to take advantage of the stel-
lar engineering and computing pro-
grams that both of these institu-
tions have to offer."

The Politecnico is in the process
of developing a new industrial com-
plex, the Cittadella Politecnica, that
will eventually house research
and development centers for a number of
private companies such as General
Electric and Michelin.

In addition, the university has partner-
ships with a range of internationally renowned
research institutes and technology transfer centers.
The Politecnico is one of the top 10
European technical universities by the highly
regarded Academic Ranking of World Universities,
compiled by Shanghai Jiao Tong University’s
Institute of Higher Education. The Politecnico is a
member of the Consortium Linking Universities
of Science and Technology for Education and
Research (CLUSTER). Tech is the only U.S. insti-
tution that is an honorary member of CLUSTER.

A dual graduate degree is also available through
a partnership with the School of Computer
Science and the School of Informatics at the
University of Trento, located in Trento, Italy.

The program requires the same four-semester plan
divided between Tech and the University of Trento,
and will emphasize the development of computing
and networking applications.

"The College of Computing has had an ongoing
relationship with the University of Trento and the
Technology region of Italy for the last three years," said
Richard A. DeMillo, distinguished professor and
John P. Imay Jr. Dean of the College of
Computing. "We are providing these students the
chance to experience firsthand the new opportu-
nities that come with globalizing education."

The University of Trento is considered among
the top universities in Italy and ranked first in

April 28, 2008 | 3

IN BRIEF:

Abowd named HSI interim director

College of Engineering Dean Don Giddens announced that College of Computing Professor
Gregory Abowd will be the interim director of the Health Systems Institute (HSI).

Abowd, Distinguished Professor of Interactive Computing, will oversee HSI as a committee
headed by Giddens leads an international search for a new director. He has served as
associate director since August 2006.

HSI is a joint research effort that includes
Tech, Emory University and Children’s
Healthcare of Atlanta. For more information,
visit www.hsi.gatech.edu.

Rocket myth explained with imaging technique

Negan McRainey
Communications & Marketing

A strange wave phenomenon has
plagued rocket scientists for years: a
surprising threat with the power to destroy
an engine at almost any time.

Scientists have had a limited understanding of the problem
because they could not replicate or investi-
gate it under controlled laboratory conditions.

Generally, it is believed that these powerful and unstable sound waves, created by energy
from the combustion process, are the cause of
rocket failures in several U.S. and Russian
rockets. Scientists also have observed these
mysterious oscillations in other propulsion
and leveraging systems such as mis-
siles and gas turbines.

Now, Tech researchers have developed a liq-
uid rocket engine simulator and imaging tech-
niques that can help demystify the cause of
these explosive sound waves and bring scien-
tists a little closer to being able to understand
and prevent them. The research team was able
to clearly demonstrate that the phenomenon
manifests itself in the form of spinning acoustic
waves that gain destructive power as they rotate
around the rocket’s combustion chamber.

"This is a very troublesome phenomenon in
rockets," said Ben Zinn, the Tech’s Senior
Chair and Regents’ Professor in the Guggenheim
School of Aerospace Engineering. "These spin-
ing acoustic oscillations destroy engines with-
out anyone fully understanding how these
waves are formed. Visualizing this phenomenon
brings us a step closer to understanding it."

Though past investigations into this damaging
instability, scientists were able to observe initial stages of the problem, but were forced to shut
down engines before the waves could fully devel-
oping and cause serious damage to the engine.

But with a great deal of help from
Oleksandr Bilbik, a visiting physicist and
research scientist from Ukraine, the Tech
team developed an experimental setup and
imaging technique that provides detailed infor-
mation on how these waves form and
behave—without destroying a working engine or endangering lives.

The research was presented at the 2008
American Institute of Aeronautics and
Astronautics (AIAA) Aerospace Sciences
Meeting in Reno and funded by the Air Force
Office of Scientific Research.

"Better understanding this phenomenon could very likely lead to safer tactical and
space missions and save billions of dollars for technologies that use combustors," Zinn said.
May 2–4
The Atlanta Lyric Theatre presents the Tony Award–winning musical comedy “Anything Goes,” at 8 p.m. in the Perst Center for the Arts. For more information, visit www.perstcenter.gatech.edu.

Ongoing
The School of History, Technology and Society presents the Robert C. Williams Paper Museum exhibit “How Do They Spend It?” from April 25 to Sept. 2. Formed by Professor Gus Giebelhaus and students from HTS 4001, the exhibit examines money and inciting money from 10 countries. For more information, visit www.ipst.gatech.edu.

Conferences & Lectures
April 29
School of Chemistry and Biochemistry research scientist Ayrl Sontine presents “Excited-state Proton Transfer From ‘Super’ Photoacids to Green, Fluorescent Protein,” from 3 to 4 p.m. in room G011 of the Molecular Science & Engineering building. For more information, visit www.chemistry.gatech.edu.

April 30
The School of Literature, Communication and Culture presents its Digital Media Day, from 4 to 7 p.m. in the Skiles classroom building. For more information, visit www.lcc.gatech.edu.

May 1
Rutgers University Professor Jeehiun Lee presents “Damaged DNA: Gas Versus Solution Phase Reactivity and Biological Implications,” at 5 p.m. in room G011 in the Molecular Science & Engineering building. For more information, visit www.chemistry.gatech.edu.

May 5
Vanderbilt University Professor Sandra Rosenthal presents “Structure Property Relationships in Functional Quantum Dots; From Biological Imaging to Solid State Lighting,” at 8 p.m. in room G011 of the Molecular Science & Engineering building. The seminar is part of the Atlanta Area Chemistry Physics seminar series. For more information, visit www.chemistry.gatech.edu.

May 6
The Brook Byers Institute for Sustainable Systems presents the Georgia Climate Summit, from 9 a.m. to 5 p.m. in the Perst Center for the Arts. For information, visit http://climateconmittee.gatech.edu.

May 7
The College of Management will host play a town hall meeting on space exploration, presented by the Planetary Society and Tech’s Center for Space Systems. Bill Nye “The Science Guy” will host the meeting, held at 7 p.m. in the college’s LeCraw Auditorium. For more information, visit www.mgt.gatech.edu.

May 12
Journalist Cokie Roberts will read from and sign copies of her newest book, “Ladies of Liberty: The Women Who Shaped Our Nation.” From 2 to 5 p.m. in the Georgia Tech Bookstore. For more information, visit www.gatechbookstore.com.

May 13
The Silver Jackets, Tech’s faculty and staff retirees organization, meets at 11 a.m. in room 343 of the Student Center. Scheduled guest speakers are Howard Wertheimer, director of Capital Planning and Space Management, and Jody Lloyd Thompson, department head of the Library Archives and Records Management Department.

May 15
Michael Fonseca of CardioMEMS presents “Development of Implantable Wireless Pressure Sensors for Chronic Disease Management,” part off the NanoTech lecture series, from noon to 1 p.m. in room 101F of the Microelectronics Engineering building. For more information, visit www.nano.gatech.edu.

May 16
GTMA (Georgia Tech Military Affinity Group) presents a panel session with several Medal of Honor recipients, from 8 to 10 in the Warbird Center, in recognition of Armed Forces Day (May 17). For more information, visit www.gtma.org.

May 22
A faculty and staff farewell reception will be held for President G. Wayne and Anne Clough from 2 to 5 p.m. in the ballroom of the Georgia Tech Hotel and Conference Center in Technology Square.