

# DEGREES OF

**F**OR STUDENTS WITH THE FORTITUDE TO EARN DUAL or joint degrees in two separate disciplines, a possible final feat of program coordination looms: the mad dash between dueling graduation ceremonies. But for Dileep Bhogadi, who will graduate with a degree in mechanical engineering and a certificate in mechatronics in fall 2008, that could prove a bit harder than for most. That is because he will receive each recognition from a different university located more than 6,000 miles and 13 time zones apart.

Bhogadi will receive the degree in mechanical engineering from the University of Kansas and a certificate in mechatronics from the Korea University of Technology under a joint-degree program between the two universities.

It's a remarkable opportunity, Bhogadi says. "Participating in this kind of unique exchange program has proven to be of invaluable benefit to me academically. It has been affording me access to classes and programs that were unavailable at my home campus, and it has provided me with a different and unique approach to my master's course of study."

Bhogadi is anything but alone in his experience. Globalization has made the world flat, international academic exposure is increasingly perceived as vital, and more of anything is usually perceived as better than less. Add those three truisms together and perhaps it is no surprise that academic interest in joint- and dual-degree programs involving U.S. and foreign academic institutions is exploding.

Such programs are, after all, perhaps the ultimate wedding of U.S. and foreign higher educational institutional offerings. Dual degrees are degrees in which a U.S. and a for-

**International joint- and dual-degree programs are rapidly expanding in number, size, and scope and more institutions are launching them at both the graduate and undergraduate levels.**

**BY DAVID TOBENKIN**

eign institution grant concurrent, independent degrees. Joint degrees are arrangements in which two institutions collaborate to award a single degree. Either way, such programs offer a level of international exposure well beyond more limited educational exchange programs.

## **Current Trends**

An August 2007 Council of Graduate Schools (CGS) survey report produced statistics on the prevalence of graduate-level, joint- and dual-degree programs for the first time. The report found that 29 percent of U.S. graduate schools had

established collaborative graduate degree programs with one or more international higher education institutions. That percentage jumped to 56 percent of institutions when the largest 10 graduate schools surveyed were considered in isolation.

"Anecdotally, we knew that there was a heavy engagement, but the volume reported in the survey was surprising," says CGS President Debra Stewart. "Also interesting was a clear continuing interest in new dual- and joint-degree initiatives. Thirty-nine percent of the 50 largest schools surveyed and 21 percent of all other institutions surveyed

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had plans to establish new collaborative graduate degree programs with one or more international higher education institutions in the next two years. So the numbers are strong and they will grow stronger.”

“Everyone is running around shopping for partners to set up these programs—this is a top-of-the-radar issue in higher education, especially at the graduate level, and there, especially among master’s programs,” says John Godfrey, assistant dean for international graduate education at the University of Michigan’s Rackham Graduate School in Ann Arbor.

Stewart says that such growth reflects several factors: “Technology is allowing us to do things that we couldn’t in the past since, among other things, research materials are available online. Secondly, students are coming to us at the graduate level who are already global citizens and, as such, they expect to use that technology to be connected to the rest of the world because they themselves are already connected. And, third, there is a competitive driver among graduate programs to create an ability to understand how their discipline is unfolding in different sectors of the world.”

The CGS study found that business and engineering are the most prevalent forms of collaborative programs at the master’s level, with 44 percent of institutions with such programs offering collaborative business programs with international partners, and 35 percent offering collaborative engineering programs. The study also found the European institutions were the most likely partners for U.S. universities in such programs, with 39 percent of those U.S. institutions with collaborative programs offering them with European partners, followed by 24 percent with institutional partners in the People’s Republic of China, and 14 percent with partners in India. Stewart says a second CGS study planned for release in August 2008 will allow the body to chart year-to-year growth in joint- and dual-degree programs for the first time.



The level of interest and offerings at the undergraduate level appears to be somewhat less torrid, though here too it appears, at least anecdotally, that the pace of new program creation is increasing and the offerings are being tracked with greater vigor.

"These types of programs are an issue of increasing concern to us and part of our international commission's agenda," says Kerry Bolognese, vice president of international programs at the National Association of State Universities and Land Grant Colleges. "We just hired a person to collect data in a variety of areas and this will be one such area."

"AAU has not done a study on this issue but I believe that a number of our universities have dual-degree programs," says Amy Scott, senior federal relations officer at the Association of American Universities.

Some schools now offer a wide variety of joint- and dual-degree programs. "What makes us unusual is scale," says Steven McLaughlin, vice provost for international initiatives at Georgia Institute of Technology (Georgia Tech) in Atlanta. "Many schools have just a handful of students in these programs, whereas we have between 250 and 300 students enrolled in nine dual- and joint-degree programs, with five or six more in the works. We're interested in being aggressive and making programs available to more than just a few students."

### Benefits at Many Levels

Joint- and dual-degree programs allow educators and students to accomplish a variety of objectives. At the university level, such programs can be aggressive attempts to respond to globalization and cement broad alliances between institutions.

"Our general administration for the North Carolina University System did a year-long listening tour in the state and one of the major recommendations from the report was increasing global readiness, so all of the state schools are responding to that," says Terri Lomax, dean of the graduate school and associate vice chancellor for research at North Carolina State University (NCSU) in Raleigh.

She says that part of the response to that call is the fall 2008 launch by NCSU's Jenkins Graduate School of Management of a new one-year master of global innovation management dual-degree program with the Université Paul Cézanne Graduate School of Management (IAE) in Aix-en-Provence, France. Participants will receive a master's degree from each institution through the program, which is designed to help tech-oriented students gain international business savvy.

In some cases, dual and joint degrees are only one of a host of ties hoped to bind important relationships between international educational partners. Some even say that such programs may be a way station before they themselves are replaced with more com-



"Anecdotally, we knew that there was a heavy engagement, but the volume reported in the survey was surprising," says CGS President Debra Stewart.

plex forms of interaction between U.S. and foreign institutions. The evolution of the relationship between the University of Michigan and one Chinese institution tells such a tale, says Godfrey.

"The [University of Michigan (UM)] College of Engineering has had an important relationship with Shanghai Jiao Tong University (SJTU) since 2000," says Godfrey. "The goal of this relationship has been to help expand engineering education at SJTU, and to provide UM with a durable anchor in a leading Chinese university. This relationship began with many exchange visits and the development of personal connections, and is now a central element of Michigan's involvement in China."

"To pilot this venture, a dual-degree program was established in 2002. SJTU master's students were able to earn UM credits in Shanghai through courses taught by Michigan faculty. With this coursework, and some transfer credits, SJTU

students came to Michigan for a year and a summer to earn a master's of science degree in mechanical engineering or industrial and operations engineering that complemented the degree they were earning at SJTU. More than 35 students earned dual degrees in this program. The College of Engineering developed close personal relationships and an understanding of the politics, economics, and culture of higher education in China—this includes everything from operational practices to curriculum and pedagogy."

Godfrey says, however, that the program was allowed to expire in 2007. "It ended for lots of reasons. We learned that the communication needed to build a partnership of this scale is truly labor intensive. Developing this initiative has required input and commitment from both senior leadership and faculty at every step, and close communication between the College of Engineering and the Rackham Graduate School. Challenges included keeping the program size manageable when the demand in China is so great. Reciprocity was another issue: so far, interest from UM students in a dual degree with a Chinese university has not matched the interest from Chinese students. Also, in 2005, a new Joint Institute (JI) was created to expand and institutionalize these engineering education exchanges. The focus of the JI is undergraduate education, with the goal of bringing U.S.-style STEM [Science, Technology, Engineering, and Math] education to China. We found the master's dual-degree program to be redundant, as we have so many students from China here already that it didn't add that much value."

The new Shanghai-based Joint Institute and UM now jointly offer a sequential pair of undergraduate degrees in similar engineering disciplines from UM and SJTU for qualified students, says Amy Conger, director of international programs at the UM College of Engineering. Under the program, after students complete all the degree requirements of UM and receive a UM degree, they return to SJTU to work on their graduation thesis to complete the requirement for a separate

SJTU degree. Under consideration, she says, is a second collaborative program between JI and UM under which they would jointly offer a sequential graduate and undergraduate study program for qualified international students, who would spend four years at the Joint Institute and another year in Ann Arbor to get a bachelor's degree from SJTU and a master's degree from UM in engineering specialties.

Georgia Tech's McLaughlin says the university's many joint- and dual-degree programs have paid rich dividends. "This has had a significant impact on Georgia Tech's global reputation. Fifteen years into it, we're starting to see the benefits. Those who got degrees in France and elsewhere were from top institutions in France, as well as Georgia Tech. They've gone on to leadership positions at their companies and in government. It's part of our alumni network building for Europe."

At the department level, such programs can deliver a steady supply of students in hard-to-fill technical areas, such as engineering and computer science, as students, research assistants, or both. Many of these programs tend to be one-way programs that involve little export of U.S. students. They can also supplement programmatic holes in their academic offerings, in particular when foreign dollars support an area of research neglected in the United States.

"This helps the faculty get students who are interested in their research and are well-trained to do research," says Jacqueline Huntoon,

dean of the graduate school at Michigan Technological University, located in the small town of Houghton in the state's remote Upper Peninsula. "They are really good students. It also brings international perspectives to our community. Despite our location, nearly 40 percent of our graduate students are international."

In addition to expanding global exposure, joint- and dual-degree programs can also help increase diversity among U.S. students as well, says Michael McCracken, assistant dean at the College of Computing at the Georgia Tech: "It's a good recruiting tool for women. Our school tends to be very conservative, but the women are more adventurous in terms of participating in dual-degree programs."

For students, such programs offer a particularly intensive form of international exposure at a time when many in both research and in the working world will be collaborating with colleagues abroad. With dual degrees, they arrive in the work force with two degree or specialty weapons in their arsenal for a fraction of the time and money pursuing such programs would cost, experience in international collaboration and functioning as a full participant in another country, and, often, language skills. In addition, dual, and occasionally joint, degrees can sometimes help students obtain access to national licensing and other programs in the foreign country.



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## No Cookie-Cutter Approaches for Joint- and Dual-Degree Programs

The specifics of coordinating individual university rules, programs, and degree requirements frustrate any attempts to provide cookie cutter approaches to joint- and dual-degree programs. “There are no models that apply everywhere,” says NCSU’s Lomax. “I’ve participated in Council of Graduate Schools presentations on this issue and it seems no one is way ahead of us. We are working on a template. There are so many programs at our school interested in it. I have two or three meetings a week with different graduate programs wanting to set up dual degrees.”

“They each must be structured as individual agreements—no master template works for all universities,” agrees Michigan Tech’s Huntoon. “The needs of the universities, students, and research faculty must all be considered.”

Her institution’s own program, one in which students from Taiwanese University Chung Yuan Christian University (CYCU) receive their bachelor of science degree from CYCU in conjunction with a master of engineering or science from Michigan Tech, is a case in point in terms of how institutions are working to tailor dual- and joint-degree programs to serve very specific niches and program needs at each participating institution.

“In the case of CYCU, what the students needed was an avenue to come to Michigan Tech to work on their master’s while still enrolled in their bachelor’s program at CYCU,” Huntoon says. “Our agreement had to allow this because in their country when students finish their bachelor’s degree they enter the military, so it would be a problem if they finished their degree at CYCU before coming here. What our agreement allows us to do is to take students one credit short of completing their bachelor’s, and it allows them to postpone military service until they complete a graduate degree.”

Executing the program requires a delicate balance between the two schools, as Michigan Tech cannot award the master’s degree until the final bachelor’s credits are awarded, at which time the students enter the military. Huntoon says that dual- and joint-degree programs often require tweaks to programs to accommodate special circumstances presented by the collaborative programs:

“The biggest issue was looking at when they finish their master’s degree here, and their bachelor’s there. There’s sometimes a clash of academic calendars. Sometimes they couldn’t finish up the bachelor’s within the same semester in which they completed requirements for the master’s. This caused problems because we have a policy that requires students to remain continuously enrolled and pay either tuition or a fee each semester, a financial burden for the CYCU students. As part of our recent renegotiations with CYCU, we allowed them two semesters to finish their bachelor’s and we exempted them from the \$100 per semester fee since the student’s had no control over academic calendar issues. Those exceptions from our normal policy were important for the CYCU students.”

Such issues appear minor but such exceptionalism within a bureaucracy processing large volumes of students according to standard

## CHOOSING JOINT-OR DUAL-DEGREE PROGRAMS

SCHOOLS ALSO FACE the fundamental issue of whether to opt for a joint- or dual-degree program. Both have their plusses and minuses. Diana Carlin at the Council of Graduate Schools says that joint degrees can be easier in some respects because they are for shorter periods of time, and many STEM disciplines already have a long history of such sharing. STEM fields also have a need for postdoctoral fellows that such programs can receive, particularly with the decline of U.S.-born students entering these disciplines. On the other hand, dual degrees dangle the major carrot of a full additional degree before students and also avoid the difficulties inherent in splicing the intimate intra-degree workings of two institutions posed by joint-degree programs.

Carlin says that with a joint degree, typically one thesis or dissertation committee member is from the partner university, or a joint-qualifying examination is required.

Some institutions have structural components that determine which degree is used in the case of joint degrees, such as having the degree and diploma awarded by the school where the student wrote or defended his thesis or the students’ institution of registration.

“The degree in our joint-degree program will be in whichever school the thesis is done,” says Ron Dougherty, chairman of the Department of Mechanical Engineering at University of Kansas, which is offering a joint-degree program with Korea’s KUT.

Such programs have a way of forcing issues to the fore that might in other circumstances be dismissed as minor ones. One issue is exactly what seal or information from each institution will be reflected in the diploma awarded. Carlin says that most U.S. participants in joint-degree programs do not confer a diploma that includes the partner university’s seal, even though this is a common practice in other countries. Instead, there is usually something on the transcript indicating that the degree is offered jointly with the partner institution, she says.

In a dual-degree program, students typically complete all of the requirements for a degree at the home university and then a core of those courses are counted at the partner institution as meeting part of their core or elective requirements and additional elective or core courses are taken for the second degree.

With respect to dual degrees, institutions must ensure that students complete the requirements for each degree. In some cases, schools reduce total units required by allowing classes of one program to count against the other.

procedures can make accommodation difficult: "Because there are exceptions to normal policy, someone must pay attention to this," Huntoon says. "You must remember to treat these students differently: 'Don't issue the master's degree because they haven't completed the bachelor's degree.' They must be flagged in the system and attended to carefully. A lot of these programs are going on without large staffs to manage them and that could be a large burden. At Michigan Tech, we think the benefits to the institution are greater than the costs."

The sequencing of education at each institution is another concern. "These programs require a lot of detailed work on curriculum, marketing, and recruitment—institutions from different parts of the world need to coordinate and collaborate in these areas," says Nader Asgary, associate provost for international relations at Bentley College, a Waltham, Massachusetts-based business school, of his college's new dual international bachelor's in information management with partners including the Netherlands' Universiteit van Tilburg and Spain's Universidad de Deusto. "In our program, Bentley students will take their first-year courses at Bentley, second-year courses at Tilburg and Deusto, and remaining courses at Bentley and either of the European schools, depending on their major. That will allow students to have a stable entry into the program in their first year and then return to Bentley to complete their program."

Students will enter the four-year program for the first time in 2008 and earn dual bachelor's degrees, one from Bentley and one from either of the two European Union schools, Asgary says.

Other difficult issues to negotiate reported by institutions with joint- or dual-degree programs are conflicting instructional and examination schedules, grading systems, teaching and learning methods, and curricula.

In one program, for example, educators soon learned that it is easier for a German student taking a single exam on which nearly all academic credit is riding to adjust to the American system of more frequent testing than it is for American students to do the reverse, says Robert Hasker, a professor in the Department of Computer Science and Software Engineering at the University of Wisconsin, Platteville, and program coordinator for the school's joint international master's degree for computer science with the University of Applied Sciences in Darmstadt, Germany (Hochschule Darmstadt), and James Cook University, in Townsville, Australia.

### Common Challenges

While program specifics vary, certain common challenges present themselves. A first step is picking the right partner. The impetus for many joint and dual degrees comes from faculty with international research collaborations or who may have a degree from an



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international university. However, the down side of faculty-to-faculty relationships as a starting point is that the departure of either faculty member can derail the program, says Diana Carlin, dean-in-residence at the Council of Graduate Schools (CGS).

"Many deans at CGS meetings have expressed an opinion that the best dual and joint degrees result from long-term relationships with an institution rather than from an individual faculty member with another in a personal collaboration," Carlin says. "It is usually necessary to collaborate with the academic dean, international office, and other faculty in the discipline to determine appropriateness and fit. Faculty and graduate deans involved in planning joint-/dual-degree programs need to work with the international office and general counsel to ensure that all university procedures are followed in setting up the degree and accompanying memoranda-of-understanding or exchange agreements are prepared, if they do not exist."

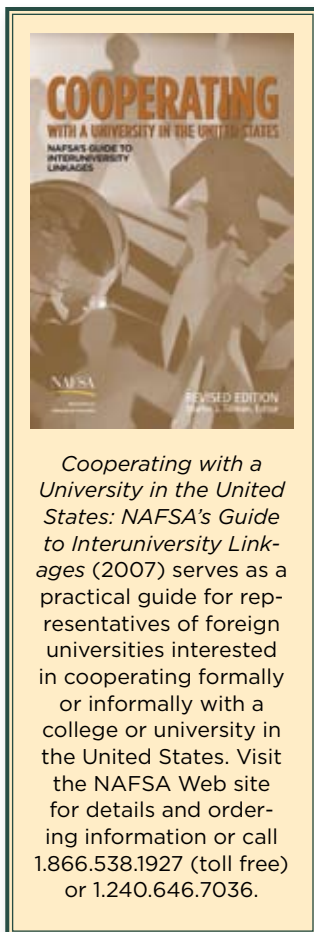
Carlin recommends as a best practice developing dual-degree programs with existing international partners, especially those with whom an exchange agreement exists, which she says often helps with tuition issues as well. However, increasing maturation of academia in many countries and coordination, including media rankings of their strengths and weaknesses, has made tracking the qualifications and suitability of programs easier, she notes.

Like U.S. universities, foreign universities are themselves looking for not just a joint- or dual-degree partner, but rather, for the right partner.

"We were looking for a high-quality partner that supports the international idea to the same extent that we believe in such a program," says Bettina Harriehausen, a computer science professor at Hochschule Darmstadt who helped set up the joint master's program with University of Wisconsin, Platteville (UWP) and James Cook University in Australia in 2003. "Many master's programs in computer science focus on subfields of computer science, such as graphics, databases, or alike. But we wanted something special, something new, something that broke borders."

"I was assigned the job to coordinate the foreign partnerships in our department. At that same time, the president of our university at that time, Christoph Wentzel, welcomed visitors from UWP and they talked about how interesting and unique it would be to set up a program that extends across the planet. After their initial brainstorming, Professor Wentzel approached me with that same idea and asked me to make plans to establish a tripartite master's program with partners in the United States and Russia (the original idea was to add Russia as a third partner, but this was later changed to Australia for various reasons, one of them being the language challenge)."

Setting up programs can be a long process, involving approvals



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at many levels of the academic bureaucracy. In addition to connections to foreign faculty, it can be critical to have a champion for such programs high in the university's bureaucracy, a role that Carlin formerly played in her previous position as dean of the graduate school at KU, according to faculty involved in the University of Kansas' joint degree with KUT and other programs.

"Faculty do need a champion," says Carlin. "You need someone who can step back to see what road blocks are likely to occur and help faculty not familiar with these arrangements navigate approval processes and secure policy waivers or changes. Some of the time this person may sound more like a devil's advocate, but that is an important role to avoid being blindsided well into the approval process."

One problem with such programs is that they can breed resentment among nonparticipating faculty and students, especially with respect to dual-degree programs when similar hard work and units completed yields only in a single degree for those not participating in the dual-degree program.

Some schools impose limits designed to ensure rigor. Godfrey says that the University of Michigan, for example, refuses to allow the awarding of

two joint degrees in the same field.

A similar issue relates to ensuring integrity and compatibility with institutions that have educational regimes and benchmarks programs very different from their own. Quality assurance has been a major issue of concern for many institutions.

Carlin says that U.S. graduate schools are typically charged with quality assurance through program approval and program review processes. At a recent global summit on graduate education held in Banff, Canada, U.S. graduate deans expressed several concerns related to quality control, including (1) how to determine the quality of a partner institution's programs, (2) accreditation, (3) how to conduct program reviews, (4) how to implement needed improvements based on program reviews, (5) how to approve programs that include more transfer credits than policies allow, and (6) how to end a nonproductive or inadequate program.

Stewart says that CGS will share best practices in joint- and dual-degree programs through several means. CGS is collecting information on different universities' practices and trends, identifying best practices and communicating them to its members. Schools with best practices regularly share their information with the graduate education community at CGS' annual meetings and at other gatherings of graduate deans. CGS will also continue to convene global leaders in graduate education to talk about how collaborative degree programs are viewed from different parts of the world. Finally, Stewart said that CGS is likely to produce a book with examples and guidelines extracted from strong programs.

## Language Barriers and Internship Challenges

Another important factor to consider in many such programs is language. Many programs require students to take remedial English classes if their language skills are not up to snuff. And while most foreign programs teach U.S. students in English, which is commonly the language of graduate education in many countries, administrators say they may well compromise the value and purpose of their degrees if they do not acquire the language of their host country.

Those who can survive the trial-by-fire of learning in another language say that alone is a lesson in itself: "In the U.S., all the classes use English to teach and for us [foreign students] it's a challenge," says Chen Yu-Tang, who will receive a bachelor of science and a master's of engineering through the Michigan Tech-CYCU dual-degree program. "I just took a course called digital communication and I didn't understand what the teacher was talking about. And when I studied by myself, I still didn't understand. I almost cried. In my past learning, I didn't have this experience that I didn't understand what teacher talk and also didn't understand when I study by myself. But in the final, I still passed the course because I didn't give up. For me it's good experience and a challenge in life. I learned to not be afraid when I meet difficulties."

In addition, integrating in foreign programs can mean more than just coursework and language preparation courses. In Europe a key part of many graduate programs, and value to American students participating in them, are internships, notes Charles Krider, academic director of the University of Kansas M.B.A. program, which offers a dual-degree program, M.B.A.–master in management, with Groupe ESC Clermont Graduate School of Management in Clermont-Ferrand, France. "Internships give U.S. participants an experience working at a European company that they can't get here," Krider says. Carlin says helping students secure such programs remains a work in progress at many joint- and dual-degree programs.

A critical component of such programs is continuing attention to refining and evaluating them. "Sustainability is better ensured if the agreement includes periodic evaluations and has a sunset provision in case there is insufficient interest in the program or conditions change," says Carlin.

Similarly, Godfrey says that schools rushing to set up programs should take care to remember that a misstep can damage their institution's reputation: "Apart from financial commitments (figuring out how to share costs and revenues), and planning for potential liabilities, it's important to keep reputational protection at the forefront—how do you back out of an agreement gone bad?"

Georgia Tech's McLaughlin says the somewhat disheartening



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truth is that even after 15 years of offering some of the university's dual-degree programs, they demand disproportionate attention and resources compared to other programs: "The biggest thing we have learned about these programs is that they are a full-contact sport. The programs rely on individual contacts between professors to students to make the program work. It's a lot of hard work, a lot of one-on-one information sharing, communication, and working closely with partners on a regular basis. The programs don't run themselves even after 15 years; it takes a tremendous amount of time and effort to sustain them."

## The Bottom Line

Cost issues posed by the international joint- and dual-degree programs have been handled by participating institutions in a variety of ways. One way is to treat students participating in joint-degree programs as students in exchange programs. Obviously, one key here is to ensure that roughly the same number of students are

going in either direction. Another approach is to simply have each university pay for classwork undertaken by its students.

In some situations, schools are turning to scholarships to get such programs started. Carlin says that it is critical to joint- and dual-degree programs' survival and growth that they are actually launched so that satisfied students can serve as positive word of mouth for them. Sometimes such financial support is the only way to do so, she says.

There is at least one federal program specifically targeted at supporting international joint- and dual-degree programs. Under a program launched in 2006, the U.S. Department of Education and European Union's Atlantis program provides four-year grants to add a European Community–United States dimension to international curriculum development and related student exchange. This year's recipients typically received \$400,000 per institution over multiple years to help fund programs, says Frank Frankfort, Atlantis program manager for the U.S. Department of Education. He notes that the first U.S. and European students under the program will receive dual degrees by summer 2008.

The program supports projects that develop organizational frameworks for transatlantic student mobility, including work placements and internships that will provide adequate language preparation and full academic credit, Frankfort says. Also supported are innovative curricula; teaching materials, methods, and modules; research internships; and teaching assignments.

One limitation for the Atlantis programs is that U.S. participants must be U.S. citizens or permanent residents, a significant limitation given the high proportion of foreign graduate students in the United States.

For many institutions, Atlantis grants have paid for participant and faculty travel costs and made the difference between offering a joint- or dual-degree program or not. "This would not have happened without the Atlantis grant funds," says Bentley College's Asgary of his institution's new international dual-degree program.

### The Road Ahead

For many schools, especially under the Atlantis program, the experiences of their first few sets of graduates may determine the fate of the programs once grant money and initial administrative commitments expire or are up for reevaluation. "Well, I hope it will survive after the grant comes to an end," Asgary says. "It should if we really find that the students are benefiting by going through the program. They will hopefully be our champions. This is truly an exercise in curriculum and cultural immersion for students. We think that this kind of distinctive global experience will prepare students for a variety of outstanding careers around the world, including global manager or international information technology specialist. They will get degrees in international management, IT, and computer science, which are important areas in the global job market." Still, regardless of the experience of individual programs, the general future of joint- and dual-degrees appears to be bright and limited only by imagination. In addition to expanding down into undergraduate programs in greater numbers, such programs are also expanding upward into an increasing number of Ph.D. programs.

Georgia Tech has dual Ph.D. programs with three French universities in electrical and computer engineering and, in a second program, dual mechanical engineering programs with three institutions in France. Georgia Tech's McLaughlin says that, on the one hand, it is easier to run because there are fewer students at a time, generally 20 or 25. On the other hand, he notes that "the academic community is very skeptical toward awarding two Ph.D.s. We've worked hard to make sure that a student gets two Ph.D.s for two different types of work."

He says this is facilitated by the fact that in France the Ph.D. is a three-year degree consisting only of research and no instruction. Students in the dual Ph.D. program first finish the French Ph.D. and then enter a new phase of one or two more years to receive the Georgia Tech Ph.D. He says students receive both degrees in five to six years after a bachelor's, compared to four to five for the usual single Ph.D. at Georgia Tech.

There are also different financial considerations. "Dual degrees at the master's level are much simpler to do than Ph.D.s," says NCSU's Lomax, whose school has set up a dual Ph.D. program in genomics with Seoul National University (SNU) and, in February, sent the first NCSU Ph.D. candidate to SNU. "Master's students generally pay their own way whereas Ph.D. students are on assistantships, so there's the question of how you finance that exchange. Why use a grant here to pay for a student to study there? That works where



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faculty in both institutions have close collaborative research programs. We've structured ours so that the American students do coursework here and do some research experience and course work there."

"Joint and dual Ph.D.s are also more complex because you need joint supervision of preliminary examinations and the advancement to candidacy, as well as for dissertations and the final oral exam," says Lomax. "The agreement we wrote says the student has to pass all qualifications of both universities and are jointly supervised by a committee from both universities that supervises a single dissertation they write. They must pass our qualifying examinations one-half to two-thirds of

their way through the program to continue."

The subject matter of joint- and dual-degree programs is also expanding to areas far from the business and STEM core. Another Atlantis grant recipient, for example, is Nazareth College in Rochester, New York, which has created an undergraduate dual-degree program with two European institutions: Semmelweis Egyetem of Hungary and Laurea Leppävaara of Finland. The three institutions received \$408,000 each to develop the program.

But the international dual-degree program stands out given its graduate students are studying a subject matter with a seemingly quintessentially local nature: nursing. Marie Theresa O'Toole, chair of Nazareth's Nursing Department, says the dual-degree program will result in dual degrees in nursing being awarded by Semmelweis and Nazareth. Students of both Europe and the United States will benefit by achieving a credential that is acceptable for licensure in both the EU and the United States with passage of nursing examinations, she says.

While she doubts too many U.S. nursing students will wish to move to Europe, O'Toole says that the program may give them a type of experience that will transcend academic specifics.

"Nursing needs global leaders and our students will have unique perspective how different approaches impact nursing care," says O'Toole. "Our students in Finland, for example, are looking at clinics managed by public health nurses. The nurses in the public health system are assigned patients and children until six and provide them with holistic care, including seeing if there are changes in mental status. It's really rich care with the whole point of the care that the person doesn't enter into acute care. In the United States, by contrast, it's rare to field a health care provider assigned to people who are healthy. Our students, who have already started the program there, are amazed at the level of health care, and at the low incidence of infant mortality and obesity, in part because of early and effective nursing intervention. That's a good lesson for our students to learn."

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