

INTERNATIONAL ENGINEERING EDUCATION DIGEST

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A periodic electronic newsletter for engineering education leaders,
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1 - International developments

African leaders endorse science initiatives – The heads of state of African countries, meeting at an African Union summit in Ethiopia, have approved initiatives aimed at bolstering research and increasing the continent’s clout on intellectual-property issues. According to an article in the February 9th *Science* by Robert Koenig, the leaders urged member states to revitalize their universities and spend at least 1% of gross domestic product on research and development by 2010. In addition, the summit called for more extensive S&T agreements with other developing regions, announced new scholarships to stimulate the study of sciences, and declared 2007 to be Africa’ “scientific innovation year”. Not included on the summit agenda was a controversial proposal to create a new African science and technology fund, which would pool resources from African nations and outside donors and distribute competitive research and development grants throughout the continent. That proposal is expected to be taken up at the S&T minister level, but finding common ground on a diverse continent whose 52 nations have widely

varying resources and priorities will continue to be a challenge. (See <http://www.sciencemag.org>)

Building African capacity tops G8 agenda – Africa continues to top the agenda of the major industrialized nations for the third year in a row. According to a press release from the World Economic Forum meeting at Davos, Switzerland, there is a growing emphasis on “building capacity” to translate developed world funds into enduring progress across the continent. African leaders involved in the discussions highlighted their concerns: ensuring economic stability, good governance, regional security, transparency, and stamping out corruption. The leaders at the Forum gave candid and repeated recognition to the fact that ample funds from one side and political will from the other is not enough to ensure lasting progress and security unless there is a determined focus on building capacity. (See <http://www.weforum.org>)

We’re all warming the world – The Intergovernmental Panel on Climate Change has reported that the warming of the world is “unequivocal”, and that humans are “very likely” (higher than 90% likelihood) behind the warming. As reported by Richard Kerr in the February 9th *Science*, the Panel also concluded that the climate system is “very unlikely” to be so insensitive as to render future warming inconsequential. These conclusions are based on six more years of research since the Panel last reported in 2001 that human activity was “likely” to be driving most of the warming. Created by the World Meteorological Organization and the United Nations Environment Program, the IPCC has released its fourth assessment report in 17 years: *Climate Change 2007: The Physical Science Basis*. Forty governments nominated the 150 lead authors and 450 contributing authors. (See <http://www.sciencemag.org>)

Spain wrestles with how to open faculty hiring practices – In 2001 the Spanish government attempted to diminish the practice of *endogamia* or inbreeding in hiring decisions in the country’s universities and research institutes by initiating a national qualifying examination for all candidates for faculty posts. Now, the Parliament is preparing to abolish this law, in the name of increasing academic freedom and institutional autonomy, but leading many to predict a return to cronyism, reports Francis X. Rocca in *The Chronicle of Higher Education*. What prompted the 2001 law was the fact that between 1997 and 2001, 65% of jobs at universities resulted from searches which considered only one candidate. The result, critics say, is an underperforming higher education system which favors mediocrity and sees high performing colleagues as a threat. If the 2001 exam is abolished as expected, national committees of professors, working in secret and without interviewing candidates, would accredit all qualified applicants, and then universities would be free to hire any such accredited person. (See <http://chronicle.com/weekly/v53/i22/22a03101.htm>)

How foundation money was wasted in Russia – In an unusual burst of semi-candor, the Ford Foundation authorized the presentation of results of a study detailing why US efforts to reform Russian higher education in the past decade have failed, reports Scott Jaschik in *Inside Higher Ed*. Stephen Kotkin, the author of the study, and director of Russian studies at Princeton, says that early efforts in the decade (1995 – 2005) were

more productive. Funding was generally directed to individuals for research and educational work, and efforts were made to build networks of people. By 1997, however, the foundations funding these efforts decided to fund larger projects, believing that they could scale up the smaller successes and in this way achieve systemic transformation. Awards to individuals were eliminated in favor of awards to departments and institutes, despite the warnings of Russian experts and those close to Russian higher education. The results were a dismal failure: many millions of dollars were lost. John A. Slocum of the John D. and Catherine T. MacArthur Foundation worries that in this day of huge foundations such as the Gates Foundation, such an irrational tendency to want to be “transformational” may lead to many new failures. Recommendations include a return to smaller scale grants to individuals, to ensuring that awardees are permitted to be independent (by purchasing for them the buildings in which they operate, for example) and to working with existing networks of scholars, while emphasizing the need for decisions made on merit. (See <http://insidehighered.com/news/2007/01/31/russia>)

English language a lightning rod in South Korean higher ed – The increasing emphasis on using English as the language of instruction in South Korea’s universities is being resisted by some who fear a loss of culture and by some who fear that they, too, might have to teach in English someday. Engineering, the natural sciences and liberal arts are the areas most commonly taught in English. Most South Korean universities are filled with faculty who earned their degrees abroad, many in the US, and so are prepared to teach in English. But as institutions set goals for increasing the percentage of classes taught in English, some faculty feel threatened by their own perceived inadequacy in the language. The push-back is strong enough to have prompted the reelection defeat of one university president, and the ouster of an American who headed the Korean Advanced Institute for Science and Technology, writes Alan Brender in *Inside Higher Ed*. (See <http://insidehighered.com/news/2007/02/20/korea>)

Indo-Fulbright program hampered by Indian bureaucracy – An article by Shubhajit Roy posted on February 11 in the on-line edition of *The Indian Express* states that India’s bureaucracy is seriously affecting the Indo-US Fulbright programme, by causing lengthy delays in visa processing for US scholars wanting to conduct research in India. Visas can take from six to 21 months to process, while Indian Fulbright scholars receive their US visas in two hours or two weeks. According to the article, in August 2006, when the academic year began, there were will 93 visas pending, out of a total of 100 new posts for that year, including some still held over from 2005. Part of the delay has been checks on not only the individual but on the subject of the proposed research, some of which many have been perceived to be inappropriate by the Indian government. (See <http://www.indianexpress.com>)

Russia attempts to quell corruption in higher ed admissions – In an attempt to clean up one of the most corrupt segments of Russian society – higher education – the Russian Parliament has moved to mandate a Unified State Examination, similar to the US SAT, by 2009. The test would replace high school final exams and most university entrance exams. This, in turn, would help reduce opportunities/requirements for bribery: currently it is estimated that over fifty percent of families bribe instructors and college admission

personnel. The new exam would also offer students in remote locations the option of submitting test results by mail, thus eliminating the need to travel long distances to testing centers, reports Bryon MacWilliams in *The Chronicle of Higher Education*. (See <http://chronicle.com/daily/2007/02/2007020506n.htm>)

Racism allegations taint Chinese recruitment – A new program that aims to inject some international blood into China’s scientific workforce has come under fire for excluding ethnic Chinese. As described by Hao Xin in the February 9th *Science*, last summer the Chinese Academy of Sciences launched a program to provide fellowships for up to 50 “international young researchers” under the age of 35 to work in CAS laboratories for one year. But it has recently been noted that the awards are limited to foreign nationals not of Chinese descent, and that fact has sparked angry reactions blasting the program as racist and discriminatory. CAS defends the restriction, pointing out that it has other programs to attract foreign researchers of Chinese ancestry. (See <http://www.sciencemag.org>)

Foreign faculty still feeling unwelcome in Japanese universities – Japanese universities are still unwelcoming to non-Japanese faculty, reports David McNeill in *The Chronicle of Higher Education*. Despite some slow progress toward diversity, only 5,652 faculty out of a total of 158,770 are foreigners on full-time contracts. And only about 20,000 of the 100,000 foreign students enrolled in Japanese universities come from countries other than South Korea and China. Some of this homogeneity is due to old laws that prohibited national universities from hiring foreigners. But more blame can be put on institutions’ reluctance to hire foreign faculty on anything other than one year contracts. Foreign faculty, on the other hand, are not prepared to learn Japanese and make a personal investment in life in that country. Some recent rules – such as elimination of civil servant status for faculty, comparable to the elimination of tenure – may increase flexibility, but critics fear that rather than strengthening the status of foreign faculty, the effect will be to drag down all faculty. (See <http://chronicle.com/weekly/v53/i24/24a04701.htm>)

Foreign branch campuses increasing around the world – The Observatory on Borderless Higher Education, part of the Association of Commonwealth Universities and Universities UK, has released new data on overseas branch campuses around the world, writes Scott Jaschik in *Inside Higher Ed*. Defining a branch campuses as a unit operating in a foreign country that offers its own degrees under its own name, the report shows that in 2005 branch campuses numbered 82, compared with 24 in 2002. US institutions run over half of those, and Australia runs 12%. Despite Western domination of the trend, a few Pakistani and Indian branches are operating in Dubai. Business and technology are the leading programs. The report points out that the trend is going strong. (See <http://insidehighered.com/news/2007/02/15/branch>)

2 - US developments

Research rises – and falls – in the President’s spending plan – On February 5th, President Bush sent to Congress a 2008 budget request for science that favors a handful

of agencies supporting the physical sciences and puts the squeeze on most of the rest of the federal research establishment. According to an article in the February 9th *Science* by Jeffrey Mervis, the 2008 request follows the pattern of the 2007 request, which proposed the American Competitiveness Initiative: a 10-year doubling of the National Science Foundation, the Department of Energy's Office of Science, and core labs at the National Institute of Science and Technology. At the same time he asked Congress to cut the National Institutes of Health, which gets almost half of the \$60-billion federal science and technology budget. If the President's 2008 request were adopted intact – which is highly unlikely – government support for basic research would rise by a miniscule 0.5% from his 2007 request. (See <http://www.sciencemag.org>)

Corporate research support rebounds – After a three-year slide, industry funding for university research and development in science and engineering fields reached an all-time high of \$2.3-billion in the 2005 fiscal year. As reported in the February 1st *Inside Higher Ed*, support rose by 7.7%, according to data from the National Science Foundation. Corporate funding, important to colleges for financial reasons and as a sign that their research has real-world support, accounted for 5% of R&D funding in science and engineering fields on campuses in fiscal 2005. (See <http://insidehighered.com>)

US firms ramp up R&D spending – An increase in corporate investment is expected to drive a small resurgence in R&D spending in the US, as China and India move to catch up. A report from Battelle Memorial Institute, described by Gautam Naik in the January 25th *Wall Street Journal*, indicates that US companies are expected to spend about \$219-billion on R&D in 2007 – a 3.4% increase over the previous year. In addition, federal support for R&D is expected to rise 1.8% to \$98.3-billion. US industry spends more on R&D than any other country in the world. US corporate spending on R&D alone is 64% more than all spending (industry, government and academia combined) in second ranked-China. (See <http://www.wsj.com>)

New era of science diplomacy – Science diplomacy has played an important, if unappreciated, role in US foreign policy over the past 50 years. In an article in the February 9th *Science*, Kristin Lord and Vaughan Turekian point out that during the Cold War scientific exchanges between Soviet and US scientists provided a critical connection between adversaries. And more than 30 years ago robust scientific exchanges between China and the US laid the groundwork for a relationship that has grown increasingly deep and complex. In recent years, scientific engagement has been a clear signal of friendship between the US and countries such as India, Egypt, and Pakistan, with high-level participation from the diplomatic communities in both countries. The authors assert that it is now time for the US to adopt science diplomacy for a new era. Science and technology offer a promising entry point for engaging governments, citizens, and civil society organizations worldwide. (See <http://www.sciencemag.org>)

Leading scientist challenges his peers to “tithe” their time – John P. Holdren, president of the American Association for the Advancement of Science, in a major address called upon scientists and engineers to donate 10% of their time to bringing the benefits of science and technology to the “human condition” and to limit their negative effects. One

of the major challenges must be to strictly limit our reliance on fossil fuels to relieve the stress we are putting on our planet. Holdren bemoaned the lack of worldwide attention to energy research. He listed four central issues facing science and technology today: “meeting the basic needs of the poor,” “managing the competition for land, soil, water, and the net primary productivity of the planet,” “mastering the energy-economy-environment dilemma,” and “moving toward a nuclear-free world.” But he warned against believing in a single silver technological bullet to solve all problems. Edward W. Lempinen wrote this article for AAAS. (See http://www.aaas.org/news/releases/2007/0216am_holdren_address.shtml)

Harvard names first woman president – Drew Gilpin Faust has been named president of Harvard University, the first woman to hold that post and the first non-Harvard educated president, reports Martin van der Werf in *The Chronicle of Higher Education*. Faust, whose doctorate from the University of Pennsylvania is in American civilization, taught at Penn for over 25 years prior to coming to Harvard as founding dean of the Radcliff Institute for Advanced Study in 2001. At Harvard she was a full member of the Council of Deans, although skeptics wondered about the appropriateness of having her being considered a peer with other deans, despite the fact that her institute enrolls no students and employs no faculty. Ms. Faust played key rolls as a member of both the committee on women in the faculty and the committee on women in science and engineering. These groups were established by former Harvard president Lawrence H. Summers in the wake of his controversial remarks about women. (See <http://chronicle.com/daily/2007/02/2007021202n.htm>)

No, you can't go to Cuba, court says, nor to Syria, Iran, etc. – The US District Court in Miami, Florida, has denied a challenge from the American Civil Liberties Union to the law prohibiting students and faculty members at the state colleges and universities from traveling to Cuba, Iran, North Korea, Syria and Sudan. The law prohibits the use of public state or federal funds, or private funds administered through the universities, for such travel, reports Brad Wolverton in *The Chronicle of Higher Education*. (See <http://chronicle.com/daily/2007/02/2007020501n.htm>)

BP funds \$500 million Energy Biosciences Institute – The University of California, Berkeley, the University of Illinois at Urbana-Champaign and Lawrence Berkeley National Laboratory will receive \$500 million from energy firm BP to create the Energy Biosciences Institute (EBI) to focus study on the production of biofuels, writes Robert Sanders at the University of California, Berkeley. Along with developing new sources of energy the EBI will also study how to limit the negative effects of energy consumption in areas such as the storage of carbon to prevent leakage into the atmosphere. The interdisciplinary approach will involve faculty in various science and engineering disciplines, as well as social scientists looking into societal impacts and legal implications of shifts to sustainable fuels. This BP award will likely be augmented by \$30 million from the State of California. (See http://www.berkeley.edu/news/media/releases/2007/02/01_ebi.shtml)

Venture capitalists venture to Washington to get help on energy programs – The new players in energy policy are Silicon Valley venture capitalists, who now claim that they need a boost from the US federal government in order to take the next leaps in the creation and adoption of alternative energy sources, writes Matt Richtel in the January 29 on-line edition of *The New York Times*. These investors have already backed start-ups involved with solar and wind power and biofuels. Their path forward is, of course, marked by the presence of powerful and well funded oil and gas interests. Lobbyists for oil and gas say that these advocates of energy alternatives are looking for government handouts because they know their products are not realistic, and if those products were to sell for less than gas or oil, then the free market would take over and government help would not be needed. Some venture capitalists, strong advocates of free market economics, are wary of government involvement, so these investors do not speak with one voice. (See <http://www.nytimes.com>)

Grainger Challenge Prize Awarded – The 2007 US National Academy of Engineering Grainger Challenge Prize competition sought innovative solutions for removing arsenic from drinking water that is slowly poisoning tens of millions of people in developing countries. The winning systems had to be affordable with low life-cycle costs, robust, reliable, easy to maintain, socially acceptable and environmentally friendly. The top prize, a gold award of \$1-million, was awarded during Engineer’s Week to Professor Abul Hussam of George Mason University. His SONO filter is a point-of-use method for removing arsenic from drinking water. The SONO filter is now manufactured and used in Bangladesh. (See <http://www.nae.edu>)

NAE elects new members – The US National Academy of Engineering has elected 64 new members and nine foreign associates. Academy membership honors those who have made outstanding contributions to “engineering research, practice, or education” and to “pioneering of new and developing fields of technology”. This election brings the total US membership to 2217, and the number of foreign associates to 188. (See <http://www.nae.org>)

3 - Technology

Squabble on how to wire the third world – At the annual World Economic Forum in Davos, Switzerland, in January, passions flared in discussions over the best way to deploy computers in the developing world. According to an article by John Markoff in the January 29th *New York Times*, different views were hotly debated between Nicholas Negroponte, former director of the MIT Media Laboratory, and Craig Barrett, former Intel chief executive. Mr. Barrett, now chair of a United Nations Global Alliance for ICT and Development, sketched out a four-point program for getting involvement from emerging economies including affordable hardware, low cost data communications, local curriculum and educators. In contrast, Mr. Negroponte offered a vision based on working through children. (See <http://www.nytimes.com>)

North Korea and the Internet – Although access to the world wide web is largely absent, internal computer communications are flourishing in North Korea. According to an article in the February 3rd *The Economist*, an influx of inexpensive Chinese made computers and a fibre-optic network for domestic use has launched a nationwide intranet there. But only a few thousand people are allowed direct access to the Internet; the rest are “protected” by a local version of China’s “great firewall”, controlled by the Korean Computer Centre. Those few with Internet access are supposed to plunder the web to find and disseminate technical information to research institutes, factories and schools – without losing control. (See <http://www.economist.com>)

Wiring the medical world – Executives of America’s largest health-care-services company, McKesson, say that information technology is finally ready to revolutionize the way medicine is managed. In an interview article in the February 19th *Fortune* by Geoff Colvin, the two top executives of McKesson note that at present less than 20% of hospitals have a fully bar-coded medication-dispensing system. They point out that lack of adoption of IT systems in the medical field is not a technological barrier, but an issue of adoption of available technology. They are hopeful that attention to this issue by the President and the media is accelerating the rate of adoption of technology at the hospital level and the physician’s office level. There is evidence that such adoption is producing better results from a quality perspective and a cost perspective. The health-care industry currently consumes 17% of US GDP, and that percentage is rising. (See <http://www.fortune.com>)

Wireless Internet without towers – An intriguingly inexpensive alternative to fixed tower installations that make wireless Internet available in communities may be available, according to an article in the February 4th *New York Times* by Randall Stross. The solution to the “last ten yards” problem may be Wi-Fi boxes that send signals from inside one house to neighbors, instead of trying to send signals into all houses from a central external system. The demand for home access to wireless Internet is driven by ready access to Wi-Fi chips in most currently offered home computers. (See <http://www.nytimes.com>)

How many Aussies will it take to change all the light bulbs? – The government of Australia has begun a phase-out of incandescent light bulbs with plans to replace them with compact fluorescents, writes Rohan Sullivan for the Associated Press and published on-line in the February 20 *Daily News Record*. This will save individual households up to 66% in power bills, and will reduce the country’s greenhouse gas emissions by about 4 million tons by 2012. Similar proposals are under consideration in California and New Jersey. Cuba began a similar program two years ago and the idea has spread to Venezuela as well. While environmentalists are pleased, they point out that the bulk of greenhouse gases come from industry. (See <http://DNRonline.com>)

4 - Students, faculty, education

US declining in percentage of baccalaureate degrees – At a conference on higher education and the law held recently in Florida, Dewayne Matthews of the Lumina Foundation for Education presented a study involving the US and the 29 member states of the Organization for Economic Cooperation and Development. He showed that the US is first among those nations in the percent of people aged 55 to 64 who have bachelor's degrees, but drops to eighth for those aged 25 to 34, indicating that we are falling behind in our commitment to broad access to higher learning. Indicators lead Matthews to be pessimistic about the future because the fastest-growing minority group is Hispanic Americans who go to college at lower rates than other segments of the population. A higher education lawyer, Paul Lowell Haines, continued this theme by proposing a set of radical changes: taxing endowment earnings of colleges and giving the money to needy students; making students studying more lucrative professions such as medicine pay higher tuitions; and abolishing tenure to make institutions more flexible, reports Martin van der Werf in *The Chronicle of Higher Education*. (See <http://chronicle.com/daily/2007/02/2007022001n.htm>)

Standardized tests are good predictors, after all, says study – The journal *Science* recently published a provocative article on standardized testing in the US, reports Scott Jaschik in *Inside Higher Ed*. The study is a “meta-analysis” of large numbers of data sets across various tests. The conclusion the researchers came to was that standardized tests, when coupled with college grades, were very good indicators of success in graduate schools, and that the tests work as predictors for both minority and white students. When looking across the tests used for medicine, law, business and Ph.D., what was remarkable was that they all predict well across a variety of outcomes, “grades, licensure passage, obtaining the degree,” states Nathan Kuncel, one of the authors of the study. He also said that he found no evidence of bias in the test questions. Nevertheless, Kuncel points out that institutions are still left with having to decide what their mission is. While this study was not funded by any test maker, critics of the conclusions point out that Kuncel evaluates research proposals for two testing organizations, something Kuncel admits, while saying that he has earned no money as a result of this study. (See <http://insidehigher.com/news/2007/02/23/tests>)

Catholic universities challenged to share resources with less wealthy – Archbishop J. Michael Miller, representing the Vatican, addressed the Association of Catholic Colleges and Universities in Washington, DC, recently, and warned members how institutions in developing countries are being forced out of research opportunities. Reminding his audience that they all came from wealthy US institutions, Miller said: “Our colleges and universities can either turn in on themselves in nationalistic races for prestige, or they can forge bonds of solidarity.” Those bonds of solidarity should be with institutions in developing countries with fewer resources. It is also the obligation of Catholic institutions to examine the pros and cons of globalization and its effects on “the human person.” Elizabeth Redden wrote this article for *Inside Higher Ed*. (See <http://insidehighered.com/news/2007/02/05/catholic>)

The presence of immigrant black students in diversity counts – In an article that appeared in the February issue of the *American Journal of Education*, reports David

Glenn in *The Chronicle of Higher Education*, scholars presented evidence that over 25% of the black students enrolled in selective US colleges and universities are either first or second generation Americans. Furthermore, immigrant black students, when compared with native-born black students, were more likely to have one parent with an advanced degree, were more likely to have attended a private school, and had higher SAT scores. Significantly, the college grades of both immigrant and native-born black students were the same. One possible explanation for this is that immigrant black students are more prone to elect challenging majors such as engineering where grades are generally lower for everyone. “Social scientists and policy makers too often fail to appreciate the heterogeneity of the black population in America,” said Camille Z. Charles, one of the authors of the study. (See <http://chronicle.com/daily/2007/02/2007020103n.htm>)

Wieman gears up for major study of science education – Carl E. Wieman, Nobel Prize winner in physics in 2001, is now settled into his new position at the University of British Columbia, although still engaged 20% back at his old home institution the University of Colorado at Boulder. In neither place is he doing physics experiments, but instead has launched into developing new and better methods for teaching science, especially in introductory college courses. Most science students, according to Wieman, are forced to engage in rote learning, and in the process learn that “science is uninteresting and irrelevant,” reports Burton Bollag in *The Chronicle of Higher Education*. His new university has committed 10.2 US\$ over five years to support his research, most of which will go toward hiring science-education specialists who will develop and test new methods. Testing is a central issue in Wieman’s work, since data will be needed to convince faculty members that they should change their old approaches to teaching. While Wieman says he misses his physics research, he believes that it is urgent for society to better understand scientific issues. (See <http://chronicle.com/weekly/v53/i23/23a00801.htm>)

ETS says middle class is threatened with extinction – The Educational Testing Service recently issued a report, “America’s Perfect Storm: Three Forces Changing Our Nation’s Future,” which predicts “the death of the middle class as we know it,” if we do not change. The three forces are insufficient literacy skills, the changing economy, and a shift in national demographics. The report says that half of Americans do not have the literacy skills needed, as witnessed by the fact that high school graduation rates have stagnated since 1995. The economy is changing so that about 90% of jobs in the future will require post-secondary education. And new immigrants who will make up half of the population growth in the US will likely arrive with inadequate education and English language skills. ETS plans to organize a forum on the topic, reports Shilpa Banerji in the February 6 on-line edition of *DiverseEducation*. (See <http://www.diverseducation.com>)

A stand against Wikipedia – As Wikipedia has become more and more popular with students, some professors have become increasingly concerned about the online, reader-produced encyclopedia. According to an article in the January 26th *Inside Higher Ed*, many professors have complained about the lack of accuracy or completeness of entries, and some have discouraged or tried to bar students from using it. Now the History Department at Middlebury College is trying to take a stronger, collective stand. It has

voted to bar students from citing the Web site as a source in papers or other academic work. All faculty members will be telling students about the policy and explaining why material on Wikipedia – while convenient – may not be trustworthy. (See <http://insidehighered.com>)

Troubles grow for for-profit university – The University of Phoenix became the largest private university in the US by delivering high profits to investors and solid, albeit low-overhead education to mid-career workers seeking college degrees. But, according to an article by Sam Dillon in the February 11th *New York Times*, its reputation is fraying as critics say that the relentless pressure for higher profits, at a university that gets more federal student aid than any other, has eroded academic quality. According to government statistics, the university relies more on part-time faculty than all but a few other postsecondary institutions, and its accelerated academic schedule races students through course work in about half the time of traditional universities. The graduation rate is 16 percent, among the nation's lowest. The university's new president, however, defended its academic quality and said that it met the needs of working students who had been largely ignored by traditional colleges. (See <http://www.nytimes.com>)

Higher standards of learning urged for states – The tremendous variation in what a state teaches and the way it measures how well children are learning has triggered a move for national standards and assessments in elementary and secondary school science and math education, according to an article by Yudhijit Bhattacharjee in the February 2nd *Science*. Currently, under the No Child Left Behind Act, each state assesses what its students have learned with its own standards and tests. Proponents of a different approach say that having national standards is the only way to ensure that the country produces enough scientifically literate graduates to keep the US competitive in a global economy. But the idea is controversial, with critics saying that national standards would undermine state and local authorities who traditionally are responsible for pre-college education. (See <http://www.sciencemag.org>)

5 - Employment, competitiveness

Keeping research and leadership at home – In the January 18th issue of *Business Week*, nine leaders offer their opinions on what the US should do to hold onto its braintrust and stay on the cutting edge of innovation. As reported by Vivek Wadhwa, the leaders agreed that globalization is a reality, and that US businesses see tremendous opportunities abroad and will increasingly locate their operations closer to growth markets. They will also outsource engineering jobs to reduce costs and move their research functions close to their offshore development sites. The risk in this is that the US will lose its ability to “invent” the next big technologies. The nine leaders cited in the article stress the need to improve k-12 education, encourage students to study more math and engineering, bring the best and brightest talent from around the world, and up the ante in basic research. (See <http://www.businessweek.com>)

Most lucrative degrees for 2007 grads – CNN Money editor Jeanne Sahadi, in a February 14th release, displays National Association of Colleges and Employers projections about hiring and salaries for 2007 college graduates. Employers have said that they expect to hire 17.4% more college grads in 2007 than they did last year, and in many instances they plan to pay them more, too. The students faring the best are marketing and business administration majors: marketing starting salaries will be up 14% from last year, at \$41,323; and business administration majors are seeing a 9.2% jump to \$43,523 in starting salaries. Just behind are several technical fields: mechanical engineering up 7.7% to \$54,587; chemical engineering up 7.4% to \$60,054; management information systems up 5.5% to \$46,568; civil engineering up 4.8% to \$47,145; electrical engineering up 3.2% to \$54,599; computer science up 2% to \$51,070; and accounting up 1.7% to \$46,508. By comparison, liberal arts graduates (including psychology, political science, history, English) will see a 1.1% decline in starting salaries, down to \$30,502. (See <http://www.CNNMoney.com>)

Greater profits, fewer start-ups in US research institutions – The Association of University Technology Managers issued its 2005 report on licensing rights, and announced that the number of universities which created large numbers of spin-off companies had declined from the previous years. Despite this fact, at least twenty-four universities each earned over \$10 million in licensing fees in 2005. This year's report varies somewhat in format and scope from previous reports, making some data more difficult to interpret. The information from Wake Forest University in North Carolina was notable: despite a relatively small investment in research, it increased its licensing income by \$15 million over 2004, presumably through its focused approach on the transfer of technology related to medical fields, where licensing is particularly valuable. The Association and others involved with tracking technology transfer are grappling with ways to report on activities without playing into the hands of those who would use raw data as metrics of institutional status. Another group – Universities Allied for Essential Medicines – is pushing universities to insure through their licensing agreements that better information is gathered to permit examination of the relationship between university licensing agreements and global health access. This report was written by Goldie Blumenstyk in *The Chronicle of Higher Education*. (See <http://chronicle.com/daily/2007/02/2007022101n.htm>)

6 - Meetings

Science, Technology and Innovation Global Forum – The World Bank convened a major international forum in Washington on 13-15 February. Focus of the forum was building science, technology and innovation capacity for sustainable growth and poverty reduction. Panel discussions included development and diffusion of appropriate technologies, the gender dimension of STI capacity building, building STI capacity for meeting the Millennium Development Goals, adding value to natural resource sectors, technological learning, public-private partnerships, supporting entrepreneurship, building R&D capacity in developing countries, and harnessing R&D capacity from OECD

countries. Some 300 participants attended the forum, with a heavy emphasis on sub-Saharan Africa. (See <http://www.worldbank.org/stiglobalforum>)

ASEE Global Colloquium on Engineering Education - The sixth in a series of global colloquia organized by the American Society for Engineering Education will be held at Bogazici University in Istanbul, Turkey from 1-4 October 2007. Papers are being sought on three themes: advancing global engineering education research, enhancing global engineering innovation and entrepreneurship, and assuring engineering quality and enabling global mobility. The colloquium will focus on successful strategies and practices for advancing these themes. (See <http://www.asee.org/gcee2007>)

7 – Journals

Journal of Engineering Education – The January 2007 issue of this ASEE sponsored journal is introduced by a guest editorial by John Bransford of the University of Washington: “Preparing People for Rapidly Changing Environments”. It also contains six research oriented articles on several timely topics: development of engineering education research, diversifying the US engineering workforce, predicting STEM enrollment, independent problem solving, interactive learning, and relationship of high course workloads to student evaluation of instructors. (See <http://www.asee.org>)

Global Journal of Engineering Education – Volume 10 Number 3 is a special edition containing papers from the German Network on Engineering Education VII. Guest editor is Norbert Grünwald of Hochschule Wismar. Papers are in German. (See <http://www.eng.monash.edu.au/uicee>)

Chemical Engineering Education – The Winter 2007 issue highlights the activities of Chemical Engineering at Polytechnic University, and reviews the career of educator Joseph Reynolds at Manhattan College. The volume contains ten papers on chemical engineering education, including several on classroom techniques such as hands-on experiments and Internet-based distributed laboratories. (See <http://cee.che.ufl.edu/index.html>)

IEEE Transactions on Education – The February 2007 volume is a special issue on Grid-Based Technologies Applied to Education. Papers on the featured topic include discussions of teaching grid-computing, grid-based virtual laboratory experiments, and a grid-powered framework for course support. The volume also includes seven additional papers on a variety of topics, including problem-based learning. (See <http://www.ewh.ieee.org/soc/es>)

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