DEAR FRIENDS,

Welcome to the start of a new school year and our fall newsletter. We had a particularly busy summer with 47 members of the MIT faculty, old and new, engaged in teaching 45 short professional courses on campus. Among them was a new course on Crisis Management, organized by the MIT Office of Environment, Health, and Safety and led by Professor Richard Larson, that attracted professionals from around the world—40 percent came from outside the U.S. One start-up company professional—Oscar Davila from Mexico—attended three courses over the summer, returning home between sessions. Also this summer, celebrating his 25th consecutive year of teaching the bio-pharma course Downstream Processing, Professor Charles Cooney attracted the highest number of registrants among all summer courses. Professor Cooney will be on sabbatical this year but we expect him to return next summer to continue his legacy with us.

Earlier this year, as part of our global outreach initiative, we conducted our first professional course in India titled Airport and Airline Systems led by Professor of Engineering Systems Richard de Neufville and Dr. Peter Belobaba of the International Center for Air Transportation. We were fortunate to have India’s Civil Aviation Minister, Hon. Praful Patel, inaugurate the well-received course held in western India.

Back in Cambridge, 12 fellows graduated from the Career Reengineering Program, a highly individualized career-reentry program that attracts mid-career professionals from diverse disciplines and backgrounds. Among them, this year, was an orthopedic surgeon, Dr. Yolanda Roth, who relocated from Washington D.C., to attend the program—coincidentally while her two sons were also attending MIT!

I invite you to read these stories and more in our newsletter. Thank you in advance for your interest, feedback, contribution, and participation in our programs.

Best Regards,

Bhaskar Pant, Executive Director
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IN BRIEF

First MIT Professional Course Delivered in India

The 3-day course “Airport and Airline Systems: Planning, Design and Management” enrolled more than 25 senior executives and government officials from the Indian aviation sector in Lavasa, a new hill city being developed near Pune, in western India. Inaugurating the course, India’s Minister for Civil Aviation, Hon. Praful Patel said, “This collaboration with MIT comes at an opportune moment when more than 40 new airports are slated for construction in India over the next decade and air passenger volume is projected to increase three-fold, to 300 million, during the same period. Such specialized initiatives are critical in providing a positive direction to the human resource capital of India.” Learn more: http://web.mit.edu/newsoffice/2010/india-education.html

Accenture Solution Delivery Academy

The MIT Professional Education Custom Program with Accenture has trained over 20,000 Accenture employees worldwide. As part of the MIT Faculty Lecture Series component of the program, Computer Science Professor Srinivasa Devadas held lectures on cloud and crowd computing to over 1,700 IT professionals, students, and Accenture employees in Malaysia and the Philippines.

Seoul, Korea Info Session

To increase awareness about the Advanced Study Program in a key growth market, MIT Professional Education held an information session in Seoul, Korea in July. The over 30 attendees included MIT alumni, representatives from Samsung, Samyang, CBS Radio, Johnson & Johnson Medical, SK Holdings, KPMG, Bain & Co, and Microsoft. Korean-native Seun Lee, a recent Advanced Study Program Fellow, spoke in Korean about the benefits he gained from his experience.

Healthy Spurt in Enrollments for Short Programs

MIT Professional Education held 45 short courses, with a healthy growth of 20 percent in enrollment compared to 2009. Some 849 participants representing over 50 countries attended the courses. One student from Mexico accumulated 13,656 air miles traveling three times from Hermosillo to Cambridge to attend three separate courses.

The top institutional or corporate sources of students were MIT Lincoln Laboratory, Genentech, Eli Lilly, Sanofi Pasteur, and the United States military.

Students learn about crisis management. Photo by Megan Davies

Bhaskar Pant. Photo by Stuart Darsch

New Letter

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Hermosillo to Cambridge to attend three separate courses!
Charles Cooney SM ’67, PhD ’70 has taught MIT Professional Education courses since his earliest teaching days at MIT. After earning an SM and PhD in biochemical engineering at MIT, he embarked on a short post-doc stint at Squibb Institute for Medical Research. When he returned to teach later in 1970, he knew he wanted an academic career but his industry interests were sharpened as well.

“My entire career has focused on manufacturing science,” Cooney says. “My focus has been the technology, processes, science, and the education that links discovery in science to delivery of that discovery to patients or consumers.”

As a student he was drawn to MIT by the Institute’s innovative program in biological process technology and chemical engineering and also by the work of a dynamic assistant professor, Daniel Wang ’59, SM ’61. Cooney and Wang began teaching a course for professionals on fermentation technology—a skill essential to making emerging antibiotics and biofuels—that first academic year. Now, 40 years later, Cooney still joins Wang, now an Institute Professor, every summer in that course.

“Looking back, I was part of creating a whole new industry for the manufacturing side,” says Cooney, the Robert T. Haslam (1911) Professor of Chemical Engineering. “When we got into the advent of biotechnology in the 1980s, it became a course for industry people that taught the first principles of biotechnology. I started a downstream processing course to complement the fermentation course. In fermentation, we had the upstream system processes and, in downstream, we talked about the technology to recover those products.”

This year is the 25th anniversary of Cooney’s Downstream Processing course and it’s still evolving. Each year industry lecturers address advances in the field and Cooney updates some 10 percent of the course materials, such as cases and examples. However, some core features are consistent. “We focus on the fundamentals in a very real way. For example, we teach the students the fundamentals of centrifugation, a very important process. If you understand the theory and the physics of the process, then you can understand how it can go wrong and how to fix it.”

Cooney has worked primarily in the rapidly evolving biotechnology and pharmaceutical worlds. His academic work focuses on the fundamentals of absorption and filtration in downstream processing, the use of genetic engineering to solve process problems, and the application of benchmarking to measure performance in pharmaceutical manufacturing. He has worked with a range of startups as well as major biotechnology companies. He is a director at Genzyme, Cuno, and BioCon India. This combination of entrepreneurial interests and his academic work made him a natural to help found the Deshpande Center for Technological Innovation, where he continues to serve as faculty director.

He has also brought that academic-business acumen to customized academies designed jointly by MIT Professional Education and Sloan Executive Education for BP’s globally dispersed project and operations leaders. Now he is part of the Novartis-MIT Center for Continuous Manufacturing, an MIT-industry collaboration aiming to transform pharmaceutical manufacturing from traditional batch processing to a more efficient continuous process. Cooney says some 50 faculty and PhD students are reinventing the manufacturing process, which they expect to demonstrate in late 2010.

Amid his busy academic and industry schedule, he has continued to teach an MIT Professional Education course each summer because, he says, he benefits from the interactions with the industry professionals who take the course. “We learn by the questions we get and discussions in class,” Cooney says. “We learn a lot by the conversations in the hallway when they bring up their real life problems. All of this relates to the content that you are giving in the classroom. I always say it keeps me honest in terms of what I present and how I describe it. I’m trying to address real solutions to real problems.”

Interested in taking a short course at MIT with Professor Cooney?:
Professor Cooney will be directing or teaching in the following short courses at MIT in the summer of 2011:
- Downstream Processing
- Fermentation Technology
- Other biopharma courses in the summer 2011 session will cover the following topics:
  - Controlled Release Technology
  - Bioreactors and Bioprocessing
  - Crystallization Science and Technology
  - Formulation and Stabilization of Biotherapeutics
  - Nanomaterials for Biological and Pharmaceutical Technologies

Learn more about these courses at shortprograms.mit.edu
Student Experience

Summer Nanotechnology Courses Fuel Mexico’s Nanotechnology Industry

MIT Professional Education Short Programs’ nanotechnology offerings lured Oscar Davila to come from his home in Hermosillo, Mexico, to Cambridge not once, but three times in the span of five weeks.

When not studying in Cambridge, Davila works six or seven days a week for two companies, Rubio Pharma and RD Research and Technology, designing clean-room technology, managing a new building project, and leading research and development in biomedicine, pharmaceuticals, and bio-electronics.

“Rubio Pharma is the only private company in Mexico working in nano and micro fabrication,” says Davila.

To move Rubio Pharma forward, Davila needed to deepen his knowledge of nanotechnology, nanotech powder, and molecular electronics to help his company develop its stem cell research in Mexico. Currently, the company manufactures pharmaceuticals for the domestic Mexican market and wants to expand internationally.

This eager engineer and researcher found out about the classes the old-fashioned way: by word-of-mouth. When Davila’s San Jose, CA, nanotechnology supplier, Nanonex, informed him that their materials might be used in the Nanostructures Fabrication class at MIT, Davila went straight to the MIT website to investigate the classes. He was pleased to see three courses offered during June and July 2010. He didn’t just sign up for all three classes—he recruited more students.

Coming to MIT allowed the Mexican engineer and two of his coworkers to deepen their knowledge and work with practical applications in the lab.

“The advantage of studying at MIT was that not only were the instructors MIT professors, they were also experts in their field. Various nanotechnology professors led each class and each one was an absolute expert. It makes such a difference to be in a small class and get personalized attention from international experts,” said Davila.

His positive experience is the quintessence of MIT Professional Education Short Programs. “Our participants find great value in learning from and interacting with MIT researchers who are also leaders in their fields, and in some cases, have invented the field,” says Associate Director of Professional Programs Anna M. Mahr.

Davila was not only impressed by MIT’s labs and state-of-the-art equipment; the lab work also revealed opportunities for his company to save time by investing in new technology instead of trying to develop it on their own. “Being able to see the equipment the professors and graduate students are using in the laboratories was key because I could see what they were making with the equipment. I found out about new equipment that’s better than what I currently have. It was incredible to be at MIT because I got to sharpen my ideas and think about new horizons and how to open up new research projects.”

Davila’s classmates were integral to his MIT experience. “Studying with professionals from around the world gave me the opportunity to exchange experiences and see how I could collaborate with companies in other countries.”

Going abroad for intense study is not a foreign concept to Davila, who is used to going three to four times a year to visit Asian educational and research facilities specializing in nanotechnology, especially in South Korea and Japan.

“Nanotechnology is a very important industry in Asia right now and they have a lot of companies trying to develop nano powders, nano powder equipment, and nano electronic equipment.”

Not only did it make geographic sense to go to MIT, but it was also more practical linguistically.

“Very few Asian universities offer courses on nanotechnology in English over the summer,” Davila says.

Without being able to take courses in English, Davila would have to learn Chinese, Korean, or Japanese to follow his Asian colleagues and nanotechnology experts. He is learning Chinese, but his small city of Hermosillo has no Korean or Japanese language offerings.

In just three short courses, MIT Professional Education brought the world of nanotechnology to Davila.

Oscar Davila is also the chief operating officer at RD Research and Technology, where he is responsible for designing a 2,500 square meter building and buying the scientific materials and equipment from electron microscopes right down to nano and micro-electronics.
It’s a Family Affair
Orthopedic Surgeon Joins Her Sons on Campus for an MIT Educational Experience

On a Tuesday night on the MIT campus, students Raphael and Yolanda are cleaning up after dinner when fellow student Ilan stops by on his way home. This typical college scene plays out on campuses every day, only Raphael, Yolanda, and Ilan aren’t typical students. Raphael and Ilan are brothers and Yolanda is their mother.

Ilan Moyer came to MIT first as an undergraduate, followed two years later by his younger brother Raphael. And while they both chose mechanical engineering as their major, they did so with very different futures in mind. Ilan wants to invent and make things. Raphael likes process engineering, manufacturing, and security studies/defense work. He plans to serve in the U.S. Army.

Dr. Yolanda Roth came to MIT after a successful career in medicine as a specialist in musculoskeletal oncologic surgery and total joint replacement. In her words, she was “the first woman to complete an orthopedic surgery residency at Johns Hopkins and the first woman to do a clinical and research fellowship in the Surgery Branch of the National Cancer Institute.” Yolanda both practiced and taught medicine before taking time off to deal with a family matter. A few years later she was ready to return to work, but her interests had shifted. So on a whim, she googled “career reentry” and discovered the MIT Professional Education Career Reengineering Program.

The Career Reengineering Program helps mid-career science and technology professionals re-enter the workforce after a period away, refresh skills in order to stay relevant, or change fields of concentration. A few weeks after finding the program in August 2009, Yolanda packed the family minivan, drove from Maryland to Cambridge, and enrolled.

Dr. Yolanda Roth and her sons Ilan and Raphael Moyer enjoyed some family time during the academic year. Photo by Megan Davies

First, though, she asked her sons how they felt about her becoming a student on their campus. Ilan said, “It’s cool… a little crazy.” Raphael acknowledged that “it kind of took me by surprise. But it’s exciting having her here. It’s a great opportunity for her.” Yolanda smiles when she remembers that Raphael only agreed to her coming on the condition she carry a backpack, not a briefcase, to make her a real student! Neil Moyer, her husband of 28 years, also offered support. “I’m blessed that my husband is very self-sufficient, good at cooking and taking care of himself, and maintains a sense of humor.”

Yolanda’s career had always involved academia, but she hadn’t been a student herself since medical school. She learned quickly that school had changed. First, she needed a laptop, then a PowerPoint tutorial and urgent brushing up on biochemistry, genetics, and logarithms. “Molecular biology didn’t exist as a field when I went to med school… during one presentation the grad student indicated that she was going to skip certain topics because ‘all of us had this in high school’ and I hadn’t had it in med school! For them it was second nature.” But she persevered, taking classes, listening to lectures, talking to colleagues—becoming a student again.

While Yolanda may have been a student to MIT, she was still mom to her boys. Being on campus gave her a welcome glimpse into her sons’ lives.

“One thing about campus is that I could attend events like the 2.009 presentations,” she says, “I could be there for Raphael.” Raphael chimes in, “Ilan was one of the evaluators. So Mom attended, Ilan evaluated, and I presented.” Laughing he added, “Hopefully Ilan didn’t evaluate mine.”

As the 2010 academic year ended, Ilan, Raphael, and Yolanda were all making big life changes. Ilan planned to work at a start-up until he begins an MIT master’s program in mechanical engineering in the spring of 2011. Raphael will finish his bachelor’s and master’s degrees in political science this fall before reporting for duty as a second lieutenant in the armor branch of the army. As for Yolanda, she loaded up the minivan and made the trip home to Maryland where, with a new focus and renewed passion for her work, she plans to launch her next career. “I was like a kid in a candy store. There was more to do than hours to do it in. I am greatly enriched by the Career Reengineering Program and the friendships I cultivated with other professionals in my program. It has been an immense privilege to be at MIT.”

For more information on our programs, visit
http://professionaleducation.mit.edu

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